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ABSTRACT

This packet contains a research synthesis and six research-based articles on effective schooling practices, educational time factors, expectations and student outcomes, teaching questioning skills, improving student attitude and behavior, teaching and assessing writing skills, and staff development to improve student writing. The first five of the six articles are by Kathleen Cotton. "Expectations and Student Outcomes," the first article, discusses how the teacher expectations can and do affect students' achievement and attitudes. The second article, "Educational Time Factors," stresses that the time needed for a given student to learn a given concept depends upon five factors: aptitude, ability, perserverance, opportunity to learn, and quality of instruction. The teaching style of a teacher, Dennis Duncan of Franklin Elementary School (Washington), who believes that "questions--not answers--are the heart of education" is discussed and highlighted with examples in the third article, "Teaching Questioning Skills: Franklin Elementary School." In the fourth article, "Improving Student Attitude and Behavior: Loma Linda Elementary School and Northweast Junior High School," programs in two Colorado schools are outlined which led to goal setting, higher expectations from students and improvement in student discipline. The effect of staff development courses in writing as a process and writing across the curriculum at a rural Oregon school is the subject of the fifth article, "Teaching and Assessing Writing Skills: Lacomb Elementary School." The last article, "Staff Development To Improve Student Writing Performance: East Orient Elementary School" (Jocelyn A. Butler), presents research findings regarding improved student reading scores after a Portland, Oregon, school began applying the research-based school improvement process "Onward to Excellence" (OTE) in 1984. (AA)

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SCHOOL IMPROVEMENT RESEARCH SERIES

SERIES IV
1989-90

1. Topical Synthesis #4--Revised Research Synthesis on Effective Schooling Practices
2. Close-Up #7--Educational Time Factors
3. Close-Up #8--Expectations and Student Outcomes
4. Snapshot #13--Teaching Questioning Skills: Franklin Elementary School
5. Snapshot #14--Improving Student Attitude and Behavior: Loma Linda Elementary School/Northeast Junior High School
6. Snapshot #15--Teaching and Assessing Writing Skills: Lacomb Elementary School
7. Snapshot #16--Staff Development to Improve Student Writing Performance: East Orient Elementary School

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EA022364

May 1990

Onward to Excellence

Effective Schooling Practices:
A Research Synthesis
1990 Update

Introduction

First published in April 1984, *Effective Schooling Practices: A Research Synthesis* has been updated and revised to reflect a larger and more recent body of educational research literature. Like the original version, this document offers a series of assertions about classroom, school, and district practices that research has shown to foster positive student achievement and affective outcomes.

Recent years have seen intensive research work aimed at refining our understanding of what really works in the schooling process. The assertions made in this document are supported by more than 800 research studies and summaries—over 500 more than were reviewed in preparation for the 1984 synthesis report.

Effective Schooling Practices: A Research Synthesis was originally prepared and used as a component piece of the *Onward to Excellence* (OTE) school improvement process developed and disseminated by staff of the Northwest Regional Educational Laboratory (NWREL). Indeed, the synthesis remains a key resource in the OTE process—a process which has been utilized in more than 600 schools in the Northwest and other parts of the country. The synthesis is also a key component of training activities provided to school staffs through Oregon's three Professional Development Centers (PDCs). In addition, the synthesis is disseminated as a part of NWREL's *School Improvement Research Series*, a growing collection of research summaries and related articles distributed to interested educators on a subscription basis.

Such widespread use of the synthesis through OTE, the PDCs, and the research series certainly could not have been anticipated. Nor could we have foreseen that NWREL's Document Reproduction Service would, in the six years since the synthesis was published, sell well over 50,000 copies, making it far and away the most popular NWREL product ever offered for sale. Finally, a great many complimentary copies have been distributed to NWREL's clients and colleagues. Thus, tens of thousands of copies of the synthesis have found their way into schools, district offices, state departments of education, intermediate service agencies, research centers, and the private sector. More important, the feedback provided by users tells us that the information in the synthesis is genuinely useful and, in combination with other school improvement resources, is making a positive difference in schools and classrooms.

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School Improvement Program

Those who have made the most extensive use of the synthesis, when they became aware of our intention to update and revise it, expressed their views about the approach we should take. Essentially, they said the format of the original synthesis was highly usable and should not be radically changed. We have, therefore, maintained the same general format, making some changes to organize the considerably increased numbers of research findings.

Those of us involved in preparing this revision believe it to be a meaningful and useful presentation of effective schooling practices as identified by researchers in the field. We hope that you will find it so, and that you are able to successfully apply this information in pursuit of your educational goals.

The Effective Schooling Research

The effective schooling research base identifies schooling practices and characteristics associated with measurable improvements in student achievement and attitudes and excellence in student behavior. These "effective schooling practices" include elements of schooling associated with a clearly defined curriculum; focused classroom instruction and management; firm, consistent discipline; close monitoring of student performance; and strong instructional leadership.

This booklet provides a synthesis of findings from the effective schooling research. The research base includes six parts, each with a particular focus:

- **School effects research:** Studies of whole schools undertaken to identify schoolwide practices that help students learn
- **Teacher effects research:** Studies of teachers and students in the classroom to discover effective practices
- **Research on instructional leadership:** Studies of principals and other building leaders to determine what they do to support teaching and learning
- **Curriculum alignment research:** Examinations of alternative methods of organizing and managing curriculum to determine effective approaches
- **Program coupling research:** Inquiries into the interrelationships among practices used at the district, school building and classroom levels
- **Research on educational change:** Studies to identify conditions and practices that promote significant, durable change in educational programs.

A broad and surprisingly integrated picture of effective schooling emerges when findings from all six parts of the research base are synthesized. This research base, however, is uneven in terms of quality, and the summary of findings reported in this synthesis should be treated with some caution. Some findings (on teacher effects, for example) are very well supported; others (e.g., those relating to program coupling) are more speculative. Therefore, our understanding of effectiveness cannot be entirely conclusive. However, the consistency in the findings across a great many studies using a variety of methodologies is strong and indicates that the research base in fact reveals key elements of effective schooling.

Use of the Synthesis

This research synthesis describes characteristics and practices identified by research as associated with improvements in student performance. Findings have been organized in three sections, each focused on one level of school organization: the **classroom**, the **school**, and the **district**. Groups of practices derived from the research have been organized into **practice clusters** (such as "Instruction is Guided by a Preplanned Curriculum") and then into **cluster groupings** (such as "Instruction" and "Assessment").

At the end of each practice cluster are lists of reports from the research base which support the practices cited in that cluster. While these are not inclusive of all the reports reviewed in that topic area, they are of high quality, representative of the research base, and can be expected to be useful to those wanting to pursue a given topic in more detail. Full citations may be found in the bibliography at the end of this booklet.

The findings summarized here will be of interest to persons exploring or involved in school improvement efforts. The synthesis can stimulate discussion of instructional issues, guide the development of appropriate local improvements and aid in decision making as school improvements take place. When integrated into a locally determined plan for action, these practices can be of significant assistance in the improvement of local schools.

A word of caution: This booklet cannot legitimately be utilized as a checklist or instrument for evaluating the performance of individual teachers or principals, nor should it be used as a blueprint for local school improvement. It is not a simple recipe for school improvement, nor a staff development program, nor a program for supervision.

The experience of those involved in OTE and other school improvement efforts does indicate, however, that the findings presented here are useful in helping to develop and actualize school improvement projects that bring about real change for the better. Research and experience both offer the clear and optimistic message that schools do make a difference and that, with an appropriate concentration of will and effort, teachers and administrators can substantially influence student success. We suggest that readers pursue appropriate practices by reviewing the research and considering processes for improvement which are appropriate to local needs.

Further Information and Ordering

The NWREL School Improvement Program has developed the *Onward to Excellence* process referenced above for use by local schools in applying effective schooling research results to meet local school improvement goals.

For further information about effective schooling, *Onward to Excellence*, or the *School Improvement Research Series*, contact:

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The cadre of senior trainers for the *Onward to Excellence* process, who have been the heaviest users of the synthesis, provided much valuable input. We wish to acknowledge the contributions of these trainers, who represent schools, district central offices, intermediate service agencies, universities, and NWREL: **Sara Jane Bates, Pat Bennett-Forman, Cherrie Brounstein, Kathy Busick, Jim Carlile, Suzanne Carlson, John Deeder, Sabra Hoffman, Delores Knight, Angela Luckey, Wink Miller, Gary Moore, Allan Olson, Nancey Olson, Ken Servas, Doyle Slater, Philip Starkey, Bob Taylor, Dean Thompson, Kim Thompson, Wesley Vollmer,** and **Patricia White**.

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1. CLASSROOM CHARACTERISTICS AND PRACTICES

Learning is an individual process that is shaped in the classroom. On a daily basis, teachers and students work together to extend and refine each learner's set of concepts and skills. Thoroughly planned lessons, focused instruction, regular assessment, and positive classroom management increase the probability of success.

1.1 PLANNING AND LEARNING GOALS

1.1.1 Instruction is Guided by a Preplanned Curriculum

a. Learning goals and objectives are developed and prioritized according to district and building guidelines, selected or approved by teachers, sequenced to facilitate student learning, and organized or grouped into units or lessons.
b. Unit or lesson objectives are set in a timeline so the calendar can be used for instructional planning.
c. Instructional resources and teaching activities are identified, matched to objectives and student developmental levels, and recorded in lesson plans. Alternative resources and activities are identified, especially for priority objectives.
d. Resources and teaching activities are reviewed for content and appropriateness and are modified according to experience to increase their effectiveness in helping students learn.
e. Daily, weekly, monthly, and yearly activities are laid out on the calendar to assure that resources are available and to make the best use of instructional time.

Behr and Bachelor (1981); Blumberg and Greenfield (1980); Brophy and Good (1986); Cohen and Hyman (1982); Denham and Lieberman (1980); Doherty and Peters (1981); Edmonds (1979a,b); Jorgenson (1977); Leithwood and Montgomery (1982, 1985); McGeown (1979-80); Mortimore, et al. (1988); Mortimore and Sammons (1987); Niedermeyer and Yelon (1981); Rosenshine (1976, 1983); Rosenshine and Stevens (1986); Sarason (1971); Stallings (1985a, 1986); Venezky and Winfield (1979); Wilson, R. (1981)

1.2 CLASSROOM ORGANIZATION AND MANAGEMENT

1.2.1 Instructional Groups Formed in the Classroom Fit Students' Academic and Affective Needs

a. When introducing new concepts and skills, whole-group instruction, actively led by the teacher, is preferable.
b. Smaller groups are formed within the classroom as needed to make sure all students learn thoroughly. Students may be placed according to individual achievement levels for short-term learning activities; underplacement is avoided.
c. Teachers monitor their instructional approaches, so that students in lower groups still receive high-quality instruction.
d. Teachers review and adjust groups often, moving students when achievement levels change.
e. Small groups are used for instruction and practice in the use of higher-order thinking skills.

f. Teachers make use of heterogeneous cooperative learning groups, structuring these so that there are both group rewards and individual accountability.
g. Peer tutoring and peer evaluation groupings are used to make optimum use of time and to insure that students will receive the assistance they need to learn successfully.

Bossert (1985, 1988); Calfee and Brown (1979); Cohen, E.C. (1986); DiPardo and Freedman (1988); Eder (1981); Fantuzzo, et al. (1989); Glatthorn (1989); Good (1979); Hallinan (1984); Hawkins, Doueck, and Lishner (1988); Johnson, et al. (1981); Katstra, Tollefson, and Gilbert (1987); Medley (1979); Rosenbaum (1980); Rosenshine (1979, 1983); Rosenshine and Stevens (1986); Sindelar, et al. (1984); Slavin (1987a, 1988a, 1989a, 1989-90); Sorensen and Hallinan (1986); Stallings (1974, 1979, 1985); Ward (1987); Webb (1980); Wellisch, et al. (1978)

1.2.2 Classroom Learning Time is Used Efficiently

a. Teachers allocate time to different content areas based on district and school goals.
b. Teachers keep noninstructional time to a minimum by beginning and ending lessons on time, keeping transition times short, and managing classrooms so as to minimize disruptive behavior.
c. Teachers set and maintain a brisk pace for instruction that remains consistent with thorough learning. New objectives are introduced as quickly as possible; clear start and stop cues help pace lessons according to specific time targets.
d. Teachers maintain awareness of the rest of the class when working with individuals or small groups and take action as necessary to keep all students on task.
e. To assure that time is used productively, learning activities are presented at a level that is neither too easy nor too difficult for the majority of students; adaptations are made to serve the needs of faster and slower learners.
f. Seatwork activities are kept productive through careful preparation, active supervision, and provision of assistance to students in such a way that others are not disturbed.
g. Students are encouraged to pace themselves. If they don't finish during class, they work on lessons before or after school, during lunch or at other times so they keep up with what's going on in class.
h. Teachers regularly assign homework to students above the primary grades to extend learning time; assignments are corrected in class or graded and returned quickly.

Anderson, L.W. (1975, 1980, 1985); Arlin (1979); Berliner (1979); Brookover and Lezotte (1979); Brophy (1986); Brophy and Good (1986); Brown and Saks (1986); Butler (1987); Cohen and Hyman (1982); Cooley and Leinhardt (1980); Denham and Lieberman (1980); Evertson (1985); Gambrell, et al. (1981); Glynn, et al. (1973); Good (1984); Hawley, et al. (1984); Helmke and Schrader (1988); Knorr (1981); Levine and Lezotte (1989); McGarity and Butts (1984); Ramey, et al. (1982); Rosenshine (1978, 1979, 1983); Stallings (1974, 1980); Teddlie, Kirby, and Stringfield (1989); Walberg (1988); Walberg, et al., (1985); Wyne and Stuck (1979)

1.2.3 There are Smooth, Efficient Classroom Routines

a. Teachers plan rules and procedures before the school year begins and present these to students during the first few days of school.
b. Class starts quickly and purposefully; teachers have assignments or activities ready for students when they arrive. Materials and supplies are ready, too.

c. Students are required to bring the materials they need to class each day; they use assigned storage space.
d. Administrative matters are handled with quick, efficient routines that keep class disruptions to a minimum.
e. There are smooth, rapid transitions between activities throughout the day or class.
f. Teachers circulate around the room during seatwork activities, keeping students on task and providing help as needed.

Allen (1986); Anderson, L.M., et al. (1980); Armor (1976); Brophy (1979; 1986); Brophy and Evertson (1983); Brophy and Good (1986); Doyle (1986); Edmonds (1979a); Emmer, et al. (1980a,b, 1982); Evertson (1982 a,b, 1985); Evertson, et al. (1982, 1985); Gersten and Carnine (1986); Good and Brophy (1986); Hawkins, Doueck, and Lishner (1988); Hawley, et al. (1984); Kounin (1977); Medley (1979); Rosenshine (1983); Rosenshine and Stevens (1986); Sanford, Emmer, and Clements (1983); Sanford and Evertson (1981)

1.2.4 Standards for Classroom Behavior are Explicit and are Consistently and Equitably Applied

a. Teachers let students know that there are high standards for behavior in the classroom.
b. Classroom behavior standards are written, taught, and reviewed from the beginning of the year or the start of new courses.
c. Rules, discipline procedures, and consequences are planned in advance. Standards are consistent with or identical to the building code of conduct.
d. Consistent, equitable discipline is applied for all students. Procedures are carried out quickly and are clearly linked to students' inappropriate behavior.
e. Teachers reinforce positive, prosocial behaviors, especially with students who have a history of behavior problems.
f. Teachers stop disruptions quickly, taking care to avoid disrupting the whole class.
g. In disciplinary action, the teacher focuses on the inappropriate behavior, not on the student's personality.
h. Most discipline issues are handled in the classroom; referrals to administrators are kept to a minimum.

Allen (1986); Anderson, L. M. (1980); Brophy (1979); Brophy and Good (1970, 1974, 1986); Cooley and Leinhardt (1980); Cotton and Savard (1982e); Doyle (1986); Emmer and Evertson (1980a,b, 1982b, 1985); Emmer, et al. (1982); Evertson (1982b, 1985); Evertson, et al. (1980); Good (1979); Good and Brophy (1986); Hawkins, Doueck, and Lishner (1988); Kounin (1974, 1977); Medley (1978); O'Leary and Dubey (1979); Render, Padilla, and Krank (1989); Rutter, et al. (1979); Sanford and Evertson (1981); Soar and Soar (1973); Solomon, et al. (1988); Teddlie, Kirby, and Stringfield (1989); Vincenzi and Ayrer (1985)

1.3 INSTRUCTION

1.3.1 Students are Carefully Oriented to Lessons

a. Teachers help students get ready to learn. They explain lesson objectives in simple, everyday language and refer to them throughout lessons to maintain focus.
b. Objectives may be posted or handed out to help students keep a sense of direction. Teachers check to see that objectives are understood.
c. The relationship of a current lesson to previous study is described. Students are reminded of key concepts or skills previously covered.

d. Teachers arouse students' interest and curiosity in the lesson content by relating it to things of personal relevance to them.
e. Students are challenged to learn, particularly at the start of difficult lessons. Students know in advance what's expected and are ready to learn.
f. Teachers make students aware that they are expected to contribute to classroom discussions and other participatory activities.

Block and Burns (1976); Bloom (1976); Brophy and Good (1986); Evertson (1986); Gersten, et al. (1986); Good (1979, 1984); Good and Grouws (1979 a,b); Levin, T. (1981); Porter and Brophy (1988); Rosenshine (1976, 1983); Rosenshine and Stevens (1986); Squires, Huitt, and Segars (1981); Stahl and Clark (1987); Stallings (1979, 1985); Tomic (1989)

1.3.2 Instruction is Clear and Focused

a. Lesson activities are previewed; clear written and verbal directions are given; key points and instructions are emphasized; student understanding is checked.
b. Presentations, such as lectures or demonstrations, are designed to communicate clearly to students; digressions are avoided.
c. Teachers are sensitive to the learning style differences among students, and, when feasible, they try to identify and use learning strategies and materials which are appropriate to differing styles.
d. Students have plenty of opportunity for guided and independent practice with new concepts and skills.
e. Students are taught strategies for learning and for remembering and applying what they have learned; instruction in test-taking skills is also provided.
f. Teachers use strategies to develop students' higher-level thinking skills.
g. Teachers select problems and other academic tasks that are well matched to lesson content so student success rate is high. Seatwork assignments also provide variety and challenge.
h. Computer-assisted instruction, when used, supplements teacher-directed learning and is integrated with it, rather than supplanting teacher-led activities.

Becker (1977); Becker and Carnine (1980); Berliner (1976); Brophy (1979); Brophy and Good (1986); Cobb and Hops (1973); Corno and Snow (1986); Crawford, et al. (1975); Duffy (1980); Dunn (1984); Evertson (1982b); Fitzpatrick (1982); Gage (1978); Gall, et al. (1989); Gersten, et al. (1984, 1986); Gersten and Carnine (1986); Good (1979); Good and Grouws (1977; 1979a,b); Haller, Child, and Walberg (1988); Hunter and Russell (1977); Kennedy, et al. (1978); Kulik (1983); Kulik and Kulik (1987); Larkin and Reif (1976); Levine (1982); Levine and Stark (1981a, 1982); Lortie (1975); McKenzie (1979); Medley (1978); Mevarech and Rich (1985); Nickerson (1988); Okey (1985); Paradise and Block (1984); Paris, Oka, and DeBritto (1983); Porter and Brophy (1988); Rosenshine (1979, 1983); Rosenshine and Stevens (1986); Rutter, et al. (1979); Samson (1985); Saracho (1984); Scruggs, White, and Bennion (1986); Soar and Soar (1973); Squires, Juitt, and Segars (1981); Stallings (1979, 1985); Stennett (1985): Waxman, et al. (1985); Weinstein and Mayer (1986); Weinstein, et al. (1988); White (1983); Woodward, Carnine, and Gersten (1988)

1.3.3 Effective Questioning Techniques are Used to Build Basic and Higher-Level Skills

a. Teachers make use of classroom questioning as a part of interactive teaching and to monitor student understanding.
b. Questions are structured so as to focus students' attention on key elements in the lesson.

c. To check students' understanding and stimulate their thinking, teachers ask a combination of lower cognitive (fact and recall) and higher cognitive (open-ended and interpretive) questions during classroom recitations.
d. When helping students to acquire factual knowledge, teachers ask lower cognitive questions that most students will be able to answer correctly.
e. Teachers of students above the primary grades ask many higher cognitive questions (50 percent or more) during classroom recitations.
f. Teachers allow generous amounts of "wait-time" when questioning students—at least three seconds for lower cognitive questions, more for higher cognitive ones.
g. When students' initial responses are innacurate or incomplete, teachers "stay with" them, probing their understanding and helping them to produce better answers.
h. Teachers make certain that both faster and slower learners have opportunities to respond to higher cognitive questions and are given sufficient wait-time.

Brophy (1986); Brophy and Good (1986); Cotton (1989a); Gall (1984); Good (1984); Henson (1979); Honea (1982); Hoxmeier (1986); Hunkins (1969); Johnston, Markie, and Haley-Oliphant (1987); Mahlios and D'Angelo (1983); Redfield and Rousseau (1981); Riley (1986); Samson, et al. (1987); Stevens (1985); Swift and Gooding (1983); Tobin and Capie (1980, 1981); Winne (1979)

1.3.4 Students Routinely Receive Feedback and Reinforcement Regarding Their Learning Progress

a. Students receive immediate feedback on their in-class responses and written assignments; this feedback is simple and clear to help them understand and correct errors.
b. Teachers acknowledge correct responses during recitations and on assignments and tests.
c. Teachers relate the specific feedback they give to unit goals or overall course goals.
d.. Praise and other verbal reinforcements are provided for correct answers and for progress in relation to past performance; however, teachers use praise sparingly and avoid the use of unmerited or random praise.
e. Teachers make use of peer evaluation techniques (e.g., in written composition) as a means of providing feedback and guidance to students.
f. When computer-assisted instruction is used, activities are chosen which give students immediate feedback regarding their learning performance.
g. Homework is assigned regularly to older students and graded and returned promptly—either in class by the students or by the teacher.

Barringer and Gholson (1979); Brophy (1981); Brophy and Good (1986); Broughton and Lahey (1978); Cannella (1986); Dickinson (1974); DiPardo and Freedman (1988); Gettinger (1983); Hawkins, Doueck, and Lishner (1988); Hawley, et al. (1984); Hymel and Matthews (1980); Katstra, Tollefson, and Gilbert (1987); Kulik (1983); Kulik and Kulik (1987); Lysakowski and Walberg (1981); Mortimore, et al. (1988); Porter and Brophy (1988); Rosenshine and Stevens (1986); Rupe (1986); Schunk (1983); Slavin (1979); Stennett (1985); Stevens (1985); Teddlie, Kirby, and Stringfield (1989); Tenenbaum and Goldring (1989)

1.3.5 Review and Reteaching are Carried Out as Necessary to Help All Students Master Learning Material

a. New material is introduced as quickly as possible at the beginning of the year or course, with a minimum of review or reteaching of previous content. Key prerequisite concepts and skills are reviewed thoroughly but quickly.

b. Teachers use different materials and examples for reteaching than those used for initial instruction; reteaching is more than a "rehash" of previously taught lessons.
c. Teachers reteach priority lesson content until students show they've learned it.
d. Regular, focused reviews of key concepts and skills are used throughout the year to check on and strengthen student retention.
e. When selecting computer-assisted learning activities, teachers make certain these include review and reinforcement components.
f. As with initial instruction, teachers attempt to address learning style differences during review and reteaching.

Block (1983); Block and Burns; (1976); Block, Efthim, and Burns (1989); Bloom (1976); Brophy (1986, 1988b); Brophy and Good (1986); Burns (1979); Dalton and Hannafin (1988); Dewalt and Rodwell (1988); Gillingham and Guthrie (1987); Good (1984); Guskey and Gates (1986); Hyman and Cohen (1979); Kinzie and Berdel (1988); Levin (1981); Reid (1980); Rosenshine (1976, 1979, 1983); Rosenshine and Stevens (1986)

1.4 TEACHER-STUDENT INTERACTIONS

1.4.1 There are High Expectations for Student Learning

a. Teachers set high standards for learning and let students know they are all expected to meet them. Standards are set so they are both challenging and attainable.
b. Quality standards for academic work are set and maintained consistently.
c. No students are expected to fall below the level of learning needed to be successful at the next level of education.
d. Teachers hold students accountable for completing assignments, turning in work, and participating in classroom discussions.
e. Teachers expect students to do well on tests and earn good grades.
f. Lower achievers are given time, help, and encouragement necessary to achieve at acceptable levels.
g. Teachers monitor their beliefs and behavior to make certain that high expectations are communicated to all students, regardless of gender, socioeconomic status, race, or other personal characteristics.

Berliner (1979, 1985); Block (1983); Block and Burns (1976); Bloom (1976); Brookover, et al. (1979); Brophy (1983); Brophy and Good (1986); Cooper and Tom (1983); Cotton (1989); Edmonds (1979a,b); Gersten, et al. (1986); Good (1979, 1987); Hawley, et al. (1984); Mortimore, et al. (1988); PDK (1980); Porter and Brophy (1988); Pratton and Hales (1986); Rist (1970); Rosenshine (1983); Stevens (1985); Teddlie, Kirby, and Stringfield (1989)

1.4.2 Incentives and Rewards for Students are Used to Promote Excellence

a. Excellence is defined by objective standards, not by peer comparison. Systems are set up in the classroom for frequent and consistent rewards to students for academic achievement and excellent behavior.
b. Rewards are appropriate to the developmental level of students and may include symbolic, token, tangible, or activity rewards.
c. All students know about the rewards and what they need to do to get them. Rewards are chosen because they appeal to students.

d. Rewards are related to specific student achievements. As with praise, teachers are careful not to use unmerited or random rewards in an attempt to control students' behavior.
e. Some rewards are presented publicly; some are immediately presented, while others are delayed to teach persistence.
f. Students earn some rewards individually; others are earned by groups of students, as in some cooperative learning structures.

Brophy (1979, 1980, 1981, 1986); Brophy and Good (1986); Canella (1986); Clingman, et al. (1977); Dickinson (1974); Emmer and Evertson (1980, 1981); Evertson (1981, 1982b); Evertson, Anderson, and Anderson (1980); Gettinger (1983); Good (1984); Hawley, et al. (1984); Hunter (1977); Lysakowski and Walberg (1981); Morgan (1984); Rosenshine and Stevens (1986); Rosswork (1977); Rutter, et al. (1979); Slavin (1980, 1984, 1988a, 1989a); Walker and Hops (1976)

1.4.3 Personal Interactions Between Teachers and Students are Positive

a. Teachers pay attention to student interests, problems, and accomplishments in social interactions both in and out of the classroom.
b. Teachers praise and encourage student effort, focusing on the positive aspects of students' answers and products.
c. Teachers communicate interest and caring to students both verbally and through such nonverbal means as giving undivided attention, maintaining eye contact, smiling, and positive head nodding.
d. Students are allowed and encouraged to develop a sense of responsibility and self-reliance. Older students, in particular, are given opportunities to take responsibility for school-related matters and to participate in making decisions about important school issues.
e. Teachers foster positive teacher-student and student-student relationships through the use of cooperative learning strategies.

Allen (1986); Anderson, C.S. (1985); Bhusan (1985); Brophy (1983, 1986); Brophy and Good (1986); Cooper and Good (1983); Cooper and Tom (1984); Doyle (1986); Edmonds (1979); Emmer and Evertson (1980, 1981); Glatthorn (1989); Good (1987); Good and Brophy (1982); Hawkins, Doueck, and Lishner (1988); Marshall and Weinstein (1984, 1985); Mortimore and Sammons (1987); Mortimore, et al. (1988); Rutter, et al. (1979); Taylor (1986-87); Teddlie, Kirby, and Stringfield (1989); Weinstein and Marshall (1984); Woolfolk and Brooks (1985)

1.5 ASSESSMENT

1.5.1 Learning Progress is Monitored Closely

a. Teachers regularly monitor student learning, both formally and informally.
b. Teachers focus their monitoring efforts on early identification and referral of young children with learning difficulties.
c. Teachers require that students be accountable for their academic work.
d. Classroom assessments of student performance match learning objectives.
e. Teachers are knowledgeable about test development techniques and apply these to select or prepare valid, reliable assessment instruments.
f. Routine assessment procedures are used to check student progress. These include conducting recitations, circulating and checking students' work during seatwork

periods, assigning and checking homework, conducting periodic reviews with students, administering tests, and reviewing student performance data.

g. Teachers use assessment results not only to evaluate students but also for instructional diagnosis and to find out if teaching methods are working.
h. Grading scales and mastery standards are set high to promote excellence.
i. Teachers encourage parents to keep track of student progress, too.

Bachelor (1982); Behr (1981); Block, Efthim, and Burns (1988); Bloom (1974); Brookover (1979); Brophy and Good (1986); Cohen, M. (1981, 1983); Dillashaw and Okey (1983); Evertson, et al. (1980, 1982); Fuchs and Fuchs (1986); Fuchs, Fuchs, and Tindall (1986); Good and Grouws (1979); Howell and McCollum-Gahley (1986); Milazzo and Buchanan (1982); Mortimore, et al. (1988); Natriello (1987); Porter and Brophy (1988); Rosenshine (1983); Rosenshine and Stevens (1986); Slavin, Karweit, and Madden (1989); Tomic (1989); Walberg, et al. (1985); Ward and Jungbluth (1980); Weber (1971);Worsham and Evertson (1980); Wynne (1980)

1.6 SPECIAL STUDENTS AND PROGRAMS

1.6.1 Students at Risk of School Failure are Given the Extra Time and Help They Need to Succeed

a. Teachers of young children use approaches such as continuous progress and cooperative learning, which have proved effective in reducing the incidence of later academic difficulties.
b. Careful monitoring practices keep teachers aware of students having frequent academic difficulty; problems are noted and needed help is provided.
c. Teachers are especially careful to communicate high learning and behavioral expectations to at-risk students and to hold them accountable for meeting classroom standards.
d. Teachers provide at-risk students with instruction in study skills and in the kinds of learning strategies used by successful students (e.g., summarizing, questioning, predicting, etc.).
e. Whenever possible, at-risk students are given additional learning time for priority objectives; this time is spent in interactive learning activities with teachers, aides, or peer tutors.
f. Teachers and aides communicate warmth and encouragement to at-risk students, comparing their learning with the students' own past performance rather than making comparisons with other students.

Anderson, L.W. (1983); Borg (1980); Brophy (1981, 1986, 1988); Brown and Saks (1986); Cooper (1984); Cooper, Findlay, and Good (1982); Cooper and Tom (1984); Cotton (1989a); Crawford (1989); Druian and Butler (1987); Gettinger (1984, 1989); Good (1987); Griswold, Cotton, and Hansen (1986); Seifert and Beck (1984); Slavin (1980, 1984, 1987b, 1988a,b, 1989a); Slavin, Karweit, and Madden (1989); Slavin and Madden (1989a,b); Stein, Leinhardt, and Bickel (1989); Waxman, et al. (1985)

2. SCHOOL CHARACTERISTICS AND PRACTICES

The school is more than a collection of people, subjects and grade levels. The qualities of the school as a whole can either enhance or detract from the classroom learning environment. Clear expectations, consistency and collaboration among adults, strong instructional leadership, and a central focus on learning are all important in pursuing instructional effectiveness.

2.1 PLANNING AND LEARNING GOALS

2.1.1 Everyone Emphasizes the Importance of Learning

a. All staff have high expectations for student achievement. Expectations are for all students; all students are expected to work hard toward the attainment of priority learning goals.
b. The principal and other administrators continually express expectations for improvement of the instructional program.
c. School goals focus on academic achievement, and school policies emphasize the importance of achievement.
d. Everyone accepts that school is a place for learning. This is reflected in the use of mission statements, slogans, mottos, and displays that underscore the school's academic goals.
e. When educational issues arise, student learning considerations are the most important criteria used in decision making.

Andrews and Soder (1987); Armor, et al. (1976); Austin and Holowenzak (1985); Bamburg and Andrews (1987); Berliner (1979); Brookover and Lezotte (1979); Brundage (1979); Edmonds (1979a,c); Good (1987); Good and Brophy (1986); Larsen (1987); Little (1982); Madden, Lawson and Sweet (1976); Murphy and Hallinger (1988); New York SDE (1974); Newberg and Glatthorn (1982); Peng (1987); Purkey and Smith (1983); Rosenholtz (1985, 1989a,b); Rutter, et al. (1979); Weber (1971); Weiss and Weiss (1975); Wellisch (1978); Wilson and Corcoran (1988)

2.1.2 The Curriculum is Based on Clear Goals and Objectives

a. Learning goals and objectives are clearly defined and displayed; teachers actively use building curriculum resources for instructional planning. District curriculum resources are used, when available.
b. Clear relationships among learning goals, instructional activities, and student assessments are established and written down.
c. Collaborative curriculum planning and decision making are typical. Special attention is focused on building continuity across grade levels and courses; teachers know where they fit in the curriculum.
d. Staff, students and the community know the scope of the curriculum and the priorities within it.
e. Periodic curriculum alignment and review efforts are conducted to insure congruence with school and district goals.

f. Curricular materials are periodically reviewed to assure freedom from gender, racial, ethnic, or other biases.

Behr and Bachelor (1981); Berliner (1985); Block (1983); Blumberg (1980); Bossert (1985); Corcoran (1985); De Bevoise (1984); Doherty and Peters (1981); Edmonds (1979a); Everson, et al. (1986); Good and Brophy (1985); Griswold, Cotton, and Hansen (1986); Hawley, et al. (1984); Jorgenson (1977); Larsen (1987); Leithwood and Montgomery (1982, 1985); Levine and Lezotte (1989); McGeown (1979-80); Niedermeyer and Yelon (1981); Peng (1987); Rosenholtz (1985, 1989a,b); Sarason (1971); Schau and Scott (1984); Scott (1984); Stevens (1985); Venesky and Winfield (1979); Vincenzi and Ayrer (1985); Westbrook (1982); Wilson, R.G. (1981)

2.2 SCHOOL ORGANIZATION AND MANAGEMENT

2.2.1 Students are Grouped to Promote Effective Instruction

a. In required subjects and courses, students are placed in heterogenous groups; tracks are avoided; underplacement is avoided.
b. Instructional aides and classroom grouping techniques are used to help keep the adult/student ratio low, especially during instruction aimed at priority objectives.
c. Insofar as possible, low achievers are given in-class instruction in small groups to promote academic success and avoid the stigma often associated with pull-out classes.

Abadzi (1984, 1985); Brookover and Lezotte (1979); California SDE (1977); Cohen, E.C. (1986); Eder (1981); Evertson, Sanford, and Emmer (1981); Gamoran (1987); Gamoran and Berends (1987); Hallinan (1984); Hawley, et al. (1984); Levine and Lezotte (1989); Peterson, Wilkinson, and Hallinan (1984); Ramey, et al. (1982); Slavin (1987a,b); Sorenson and Hallinan (1986); Stallings (1974, 1979); Webb (1980); Wellisch (1978)

2.2.2 School Time is Used for Learning

a. School events are scheduled to avoid disruption of learning time.
b. Everyone understands time-use priorities; school communications highlight the need for time for learning.
c. Time-use allocations are established for the various subjects taught, based on school and district priority goals; time-use guidelines are followed by staff.
d. The school calendar is organized to provide maximum learning time. Prior to adoption, new instructional programs or school procedures are evaluated according to their potential impact on learning time.
e. During the school day, unassigned time and time spent on noninstructional activities are minimal; loudspeaker announcements and other administrative intrusions are kept to a minimum and scheduled so as not to interfere with basic skills instruction.
f. The school day, classes, and other activities start and end on time.
g. Inservice activities are provided to help staff make appropriate time allocations and increase student time on task; improvement of classroom management skills is a focus of inservice activities.
h. Student pull-outs from regular classes are minimized, either for academic or nonacademic purposes. The amount of pull-out activity is monitored and corrective action taken as necessary to keep things in balance.

i. Extra learning time is provided for students who need or want it; students can get extra help outside of regular school hours.
j. Firm and enforced policies regarding tardies, absenteeism, and appropriate classroom behavior help to maximize instructional time.

Anderson, L.W. (1983); Brookover and Lezotte (1979); Brophy (1989); Denham and Lieberman (1980); Evertson (1985); Fisher, et al. (1985); Glass and Smith (1977); Gottfredson, Karweit, and Gottfredson (1989); Karweit (1984; 1985); Larsen (1987); Mazzarella (1984); Murphy, et al. (1982); Peng (1987); Sanford, Emmer, and Clements (1983); Sanford and Evertson (1983); Slavin, et al. (1989); Stallings (1980, 1981); Strother (1984); Wiley and Harnischfeger (1974); Wilson (1981)

2.2.3 Discipline is Firm and Consistent

a. A written code of conduct specifies acceptable student behavior, discipline procedures and consequences; students, parents and staff know the code; students and staff receive initial training and periodic reviews of key features.
b. Discipline procedures are routine and quick to administer. Disciplinary action quickly follows infractions and is always consistent with the code; treatment is equitable for all students. Follow-up and action for absenteeism and tardiness normally occur within a day.
c. Students are told why they are being disciplined, in terms of the code of conduct.
d. Discipline is administered in a neutral, matter-of-fact way; the disciplinarian focuses on the student's behavior, not on personality.
e. Methods are developed and used for providing positive reinforcement for appropriate behavior, particularly for those students with a history of behavior problems.
f. Teacher and peer support is provided to help students with behavior problems develop social interaction skills.
g. Out-of-school suspensions or expulsions are minimal; in-school suspension is used in most cases.
h. Problem solving around discipline issues involves administrators, teachers, and students and focuses on causes rather than symptoms.

Behling (1984); Block (1983); Brookover and Lezotte (1979); California SDE (1977); Corcoran (1985); Cotton and Savard (1982); Edmonds (1979); Good and Brophy (1985); Gottfredson (1987); Hawley, et al. (1984); Lasley and Wayson (1982); Levine and Eubanks (1989); Levine and Lezotte (1989); Madden, Lawson, and Sweet (1976); Michigan SDE (1974); New York SDE (1974); Render, Padilla, and Krank (1989); Rutter, et al. (1979); Stallings and Mohlman (1981); Thompson, J.D. (1967); Westbrook (1982); U.S./DHEW (1978); Weber (1971); Wilson and Corcoran (1988)

2.2.4 There are Pleasant Conditions for Teaching and Learning

a. Physical facilities are kept clean and made reasonably attractive; damage is repaired immediately.
b. Hallways and classrooms are cheerfully decorated with student work products, seasonal artwork, posters depicting positive values and school spirit, etc.
c. Classroom, meeting, and storage space is sufficient for teaching and learning, conferences, inservice activities, etc.

d. The social climate is relaxed and conducive to learning; students feel physically safe and emotionally secure as they pursue school activities.

Anderson (1985); Glatthorn (1989); Good and Brophy (1986); Hawley, et al. (1984); Levine and Lezotte (1989); Little (1982); Peng (1987); Rutter, et al. (1979); Teddlie, Kirby, and Stringfield (1989); Wilson and Corcoran (1988); Wynne (1980)

2.3 LEADERSHIP AND SCHOOL IMPROVEMENT

2.3.1 Strong Leadership Guides the Instructional Program

a. Building leaders believe that all students can learn and that the school makes the difference between success and failure.
b. Instructional leaders portray learning as the most important reason for being in school; public speeches and writings emphasize the importance and value of high achievement.
c. The leader has a clear understanding of the school's mission and is able to state it in direct, concrete terms. Instructional focus is established that unifies staff.
d. Leaders, and particularly the principal, assertively seek to recruit and hire staff members who will support the school's mission and contribute to its effectiveness.
e. Building leaders know and can apply teaching and learning principles; they know research, legitimize it and foster its use in problem solving. Effective teaching practices are modeled for staff as appropriate.
f. The principal and other leaders seek out innovative curricular programs, observe these, acquaint staff with them, and participate with staff in discussions about adopting or adapting them.
g. Leaders set expectations for curriculum quality through the use of standards and guidelines. Alignment is checked and improved; priorities are established within the curriculum; curriculum implementation is monitored.
h. Learning time is protected from disruption. Administrative matters are handled with time conserving routines that don't disrupt instructional activities; time use priorities are established, widely communicated and enforced.
i. A safe, orderly school environment is established and maintained.
j. Instructional leaders check student progress frequently, relying on explicit performance data. Results are made visible; progress standards are set and used as points of comparison; discrepancies are used to stimulate action.
k. Leaders set up systems of incentives and rewards to encourage excellence in student and teacher performance; they act as figureheads in delivering awards and highlighting the importance of excellence.
l. Resources needed to ensure the effectiveness of instructional programs are acquired; resources are sought from many sources, including the community, as needed; allocations are made according to instructional priorities.
m. School leaders establish standard procedures which guide parent involvement. Emphasis is placed on the importance of parental support of the school's instructional efforts.
n. There is frequent, two-way communication with parents and community members. Leaders make the accomplishments of students, staff and the school as a whole visible to the public.

o. Instructional leaders expect all staff to meet high instructional standards. Agreement is obtained on a schoolwide instructional model; classroom visits to observe instruction are frequent; teacher supervision focuses on instructional improvement; staff development opportunities are secured and monitored.

p. Leaders express an expectation and strong desire that instructional programs improve over time. Improvement strategies are organized and systematic; they are given high priority and visibility; implementation of new practices is carefully monitored; staff development is supported.

q. When undertaking innovations, leaders are mindful of school contextual factors, such as availability of resources, nature of incentives and disincentives, linkages within the school, school goals and priorities, factions and stresses among the staff, current instructional practices, and legacy of previous innovations.

r. Leaders involve staff and others in planning implementation strategies. They set and enforce expectations for participation; commitments are made and followed through with determination and consistency; leaders rally support from the different constituencies in the school community.

Andrews and Soder (1987); Berman and McLaughlin (1979); Biester, et al. (1984); Blumberg (1980); Bossert (1982); Brookover (1979b, 1981); Brookover and Lezotte (1979); Brundage (1979); Clark, Lotto and McCarthy (1980); Corbett, et al. (1984); Crandall, et al. (1982); De Bevoise (1984); Duke (1982); Edmonds (1979a); Emrick (1977); Everson, et al. (1986); Evertson (1986); Glasman (1984); Good and Brophy (1986); Hall, Hord, and Griffin (1980); Hallinger, Bickman, and Davis (1989); Hallinger, et al. (1983); Hargrove, et al. (1981); Hawley, et al. (1984); High and Achilles (1986); Larsen (1987); Leithwood and Montgomery (1982, 1985); Levine and Lezotte (1989); Lipham (1981); Little (1981, 1982); Louis and Miles (1989); Madden, Lawson, and Sweet (1976); New York SDE (1974); Ogawa and Hart (1985); Purkey and Smith (1983); Rosenholtz (1987, 1989a,b); Stallings (1981); Venezky and Winfield (1979); Weber (1971); Wellisch (1978)

2.3.2 Administrators and Teachers Continually Strive to Improve Instructional Effectiveness

a. No one is complacent about student achievement; there is an expectation that educational programs will be changed so that they work better.

b. School improvements are directed at clearly-defined student achievement and/or social behavior problems; strong agreement is developed within the school concerning the purpose of improvement efforts.

c. Priority goals for improvement are developed based on review of school performance data; goals give focus to planning and implementation. Goals which specify desired changes in achievement or social behavior are known and supported in the school community.

d. Programs and practices shown to be effective in other school settings are reviewed for their potential in helping to meet school needs.

e. The full staff is involved in planning for implementation; specific recommendations and guidelines provide the detail needed for good implementation; plans fit the local school context and conditions.

f. Roles and responsibilities for the various aspects of the school improvement effort are clearly specified.

g. Implementation is checked carefully and frequently; progress is noted and publicized; activities are modified as necessary to make things work better. Everyone works together to help the improvement effort succeed; staff members discuss implementation and share ideas and approaches.

h. Resources are set aside to support improvement activities.
i. School improvement efforts are periodically reviewed; progress is noted, and the improvement focus is renewed or redirected; successes and new goals are reported.
j. Staff allow adequate time for innovations to become integrated into the life of the school; ongoing support is provided to teachers during the implementation process.

Austin (1978); Bamburg and Andrews (1989); Berman and McLaughlin (1978); Biester, et al. (1984); Blumberg and Greenfield (1980); Bossert (1982, 1988); Brookover (1979b); Brundage (1979); Clark, Lotto, and McCarthy (1980); Crandall, et al. (1982); David (1989); Duke (1982); Edmonds (1979a, b); Emrick (1977); Everson, et al. (1986); Evertson (1986); Gall, et al. (1985); Good and Brophy (1985); Hall, Hord, and Griffin (1980); Hargrove, et al. (1981); Hawley, et al. (1984); Hord and Huling-Austin (1986); Leithwood and Montgomery (1982); Levine and Lezotte (1989); Lipham (1981); Little (1981; 1982); Louis and Miles (1989); Madden, Lawson, and Sweet (1976); New York SDE (1974); Oakes (1989); Purkey and Smith (1983); Rosenholtz (1985, 1989a,b); Sparks (1983, 1986); Stallings (1981a); Venezky and Winfield (1979); Weber (1971); Wellisch (1978); Westbrook (1982)

2.3.3 Staff Engage in Ongoing Professional Development and Collegial Learning Activities

a. Resources are made available to support ongoing programs of professional development for staff.
b. Adequate time is set aside for staff development activities, and at least part of that time is made available during the regular work day.
c. Staff members have input into the content of professional development activities.
d. When selecting professional development activities, staff review research findings indicating which staff development approaches are effective in promoting improvements in student performance.
e. Staff are involved in group staff development activities at the building and district levels.
f. Skill-building activities are delivered over time, so that staff have the opportunity to practice their new learnings and report outcomes.
g. Staff development activities include opportunities for participants to share ideas and concerns regarding the use of new programs and practices.
h. Ongoing technical assistance is made available to staff as they pursue school improvement activities.
i. Follow-up activities are provided to ensure that newly acquired knowledge and skills are applied.
j. Resources are also made available for staff to participate in individual professional development activities to enhance job knowledge and skills.
k. Staff members learn from one another through peer observation/feedback and other collegial learning activities.
l. Collegiality is the norm; it is expected that staff members will routinely share ideas and work together toward the end of improving the instructional program.

Block (1983); Butler (1989); Corcoran (1985); David (1989); Eubanks and Levine (1983); Everson, et al. (1986); Evertson (1986); Gall, et al. (1985); Hawley, et al. (1984); Hord and Huling-Austin (1986); Joyce and Showers, (1980); Levine, Levine, and Eubanks (1985); Levine and Lezotte (1989); Little (1982); Loucks-Horsley, et al. (1987); Louis and Miles (1989); Oakes (1989); Rosenholtz (1985, 1989a,b); Sparks (1983, 1986); Wade (1984)

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2.4 ADMINISTRATOR-TEACHER-STUDENT INTERACTIONS

2.4.1 There are High Expectations for Quality Instruction

a. All staff believe that students can learn regardless of their ability level and enthusiastically accept the challenge to teach them. When staff get together informally, they often discuss instructional issues.

b. Supervision and evaluation procedures are written and intended to help teachers set and work toward professional growth goals. All staff receive feedback on performance at least annually.

c. Classroom observations are made according to guidelines developed in advance; feedback is provided quickly; emphasis is on improving instruction and boosting student achievement.

d. Established troubleshooting routines help staff get quick resolution of instruction-related concerns.

e. Staff development opportunities are provided; emphasis is on skill building; content addresses key instructional issues and priorities. Inservice activities are related to and build on each other; incentives encourage participation.

f. The principal and other school administrators hold high expectations of themselves, assuming responsibility for student outcomes and being visible and accessible to staff, students, parents, and community members.

Austin (1979); Brookover and Lezotte (1979a); Cotton and Savard (1980c); DeBevoise (1984); Dornbush and Scott (1975); Duke (1982); Edmonds (1979a); Evertson (1986); Gaddy (1988); Gall and Renchler (1985); Gersten, et al. (1986); Good and Brophy (1986); Gross and Herriott (1965); Hallinger and Murphy (1985); Leithwood and Montgomery (1982); Leithwood, et al. (1978); Lipham (1980); Louis and Miles (1989); Madden, Lawson, and Sweet (1976); Michigan SDE (1974); Murphy and Hallinger (1985, 1988); Murphy, et al. (1982); Newberg and Glatthorn (1982); Porter and Brophy (1988); Rosenblum and Jastrzab (1980); Rosenholtz (1985, 1989a,b); Sparks (1983); Stevens (1985); Wade (1984); Wellisch (1978)

2.4.2 Incentives and Rewards are Used to Build Strong Student and Staff Motivation

a. Excellence in achievement and behavior is recognized and rewarded. Requirements for awards are clear; explicit procedures ensure consistency; evaluations are based on standards rather than on comparisons with peers.

b. School staff motivate students to achieve highly and behave appropriately chiefly through praise and rewards; attempts to build motivation through threats or punishments are avoided.

c. Awards are set at several different levels of performance, providing all students with opportunities for success and recognition.

d. Incentives and rewards are appropriate to student developmental levels, are meaningful to recipients, and are structured to build persistence of effort and intrinsic motivation.

e. Teaching excellence is recognized. All staff have the opportunity to work for rewards, according to objective, explicit criteria and standards: student achievement is an important success criterion.

f. Incentives and rewards are provided to teachers who expand their knowledge and expertise through taking credit classes, applying for grants, or pursuing other professional development activities.

g. Both formal and informal recognition are used; at least some rewards are made publicly.
h. Reward and incentive structures are periodically reviewed to insure equity and effectiveness.

Anderson, C.S. (1985); Armor, et al. (1976); Block (1983); Brookover (1979); Brookover and Lezotte (1979); Good and Brophy (1985); Gottfredson (1987); Gross and Herriott (1965); Hall, Hord, and Griffin (1980); Hallinger and Murphy (1985); Hawley, et al. (1984); Levine and Eubanks (1984); Levine and Lezotte (1989); Lipham (1981); Little (1982); Louis and Miles (1989); Mortimore, et al. (1988); Oakes (1989); Purkey and Smith (1983); Rosenholtz (1985, 1989a,b); Vincenzi and Ayrer (1985); Wade (1984); Wilson and Corcoran (1988); Wynne (1980)

2.5 ASSESSMENT

2.5.1 Learning Progress is Monitored Closely

a. Staff collect and review performance data to insure early identification and treatment of young children with learning difficulties.
b. Test results, grade reports, attendance records, and other methods are used to spot potential problems. Changes are made in instructional programs and school procedures to meet identified needs.
c. Summaries of student performance are shared with all staff who then assist in developing action alternatives. Periodic reports are also made to the community.
d. Assessments are coordinated; district, school, and classroom efforts work together; duplication of effort is minimal. Assessments match learning objectives.
e. Staff follow simple routines for collecting, summarizing, and reporting student achievement information; results are related to learning objectives. Individual student records are established and updated periodically; group summaries are pulled from individual reports and reviewed over time to check for trends.
f. Analysis and discussion of test content are part of periodic curricular reviews.

Block (1983); Bossert (1985); Brookover (1979); Corcoran (1985); Edmonds (1979a); Everson, et al. (1986); Griswold, Cotton, and Hansen (1986); Glasman (1984); Hawley, et al. (1984); Leithwood and Montgomery (1982); Levine and Lezotte (1989); Louis and Miles (1989); Madden, Lawson, and Sweet (1976); Mortimore and Sammons (1987); Mortimore, et al. (1988); New York SDE (1974); Pajak and Glickman (1987); Purkey and Smith (1983); Slavin, Karweit, and Madden (1989); Squires, Huitt, and Segars (1981); Venezky and Winfield (1979); Weber (1971) Wellisch (1978); Wilson and Corcoran (1988)

2.6 SPECIAL STUDENTS AND PROGRAMS

2.6.1 Students at Risk of School Failure are Provided Programs to Help Them Succeed

a. The focus is on prevention of learning problems rather than remediation. Prevention programs featuring tutoring and/or small group instruction in reading are provided for young children.
b. Exploration, language development, and play are emphasized in programs for preschoolers; language and prereading skills using structured, comprehensive approaches are major features of kindergarten programs.

c. At-risk students participate in comprehensive programs featuring detailed teachers' manuals, curriculum materials, lesson guides, and other support materials; they are offered systematic alternatives to traditional instruction.
d. Teachers make use of proven methods such as continuous progress and cooperative learning to promote these students' learning success.
e. Programs and activities for at-risk students are carefully coordinated with regular classroom activities.
f. Alternative learning arrangements which engage the special interests of older students (e.g., "school-within-a-school," off-campus activities) are provided.
g. Remediation programs for older students incorporate validated approaches such as cross-age or volunteer tutoring and computer-assisted instruction.
h. Students are not retained in grade until all other alternatives have been considered and found inadequate.
i. Pull-out programs, when used, are intensive, brief, and designed to quickly catch students up with their peers and return them to regular classrooms—not to support them indefinitely.
j. The findings from ongoing monitoring efforts are used to adapt instruction to students' individual needs.

Allington and Johnston (1989); Becker (1987); Brophy (1982); Chall and Snow (1988); Cotton (1989c); Crawford (1989); Druian and Butler (1987); Gottfredson (1988); Griswold, Cotton, and Hansen (1986); Levine and Eubanks (1989); Levine, Levine, and Eubanks (1985); NCRVE (1989); Slavin (1987b, 1989a); Slavin and Madden (1989); Slavin, Karweit, and Madden (1989); Stein, Leinhardt, and Bickel (1989); Wheelock and Dorman (1988)

2.7 PARENT AND COMMUNITY INVOLVEMENT

2.7.1 Parents and Community Members are Invited to Become Involved

a. There are written policies which legitimize the importance of parent involvement, and administrators provide ongoing support to parent involvement efforts.
b. Procedures for involvement are clearly communicated to parents and used consistently. Staff make certain that parents know that their involvement makes a great deal of difference in their children's school performance.
c. Parents are offered various options for their involvement, e.g., tutoring their children at home, assisting in classrooms, participating in parent-teacher conferences, etc.
d. Parents are given especially strong encouragement to become involved in activities that support the instructional program.
e. Staff members provide parents with information and techniques for helping students learn (e.g., training sessions, handbooks).
f. Special efforts are made to involve the parents of disadvantaged students, who are often underrepresented among parents involved in the schools.
g. Regular, frequent home-school communications are maintained. This includes providing parents with information about student progress and calling attention to any areas of difficulty.
h. Administrators and staff continually look for ways to involve parents in decision making regarding school governance; parent/community advisors give input into school improvement efforts.

i. Parent involvement activities are monitored and evaluated, and staff and parents continually work to keep activities effective.

j. Community members participate in schoolwide and classroom activities, giving presentations, serving as information resources, functioning as the audience for students' published writings, etc.

k. Indicators of school quality are periodically published and provided to parents and community members to foster communication and stimulate public action.

Armor, et al. (1976); Becher (1984); Block (1983); Brookover (1979b); California SDE (1977); Collins, Moles, and Cross (1982); Cotton and Wikelund (1989); Cotton and Savard (1980a, 1982d); David (1989); Gillman, Schooley, and Novak (1977); Hawley, et al. (1984); Henderson (1987); Herman and Yeh (1983); Levine and Stark (1981a,b); New York SDE (1974); Sattes (1985); Stevens (1985); Tangri and Moles (1987); Walberg, et al. (1980); Walson, Brown, and Swick (1983); Williams and Chavkin (1989); Wilson (1981); Wilson and Corcoran (1988)

3. DISTRICT CHARACTERISTICS AND PRACTICES

The district creates an environment in which the pursuit of instructional effectiveness is valued. Clear and stable policies, expectations for improvement, and strong systems of support all help schools become more effective.

3.1 LEADERSHIP AND PLANNING

3.1.1 High Expectations Pervade the Organization

a. District leaders and staff believe that all students can learn and that district educators have a large degree of influence over whether students succeed or not. Learning is seen as the most important purpose of schooling.
b. District goals and priorities for improvement are set and protected; they are made highly visible throughout the school community, particularly through the efforts of the superintendent. Goals focus on improving student performance.
c. All district personnel are expected to work together for the benefit of students.
d. Improving instructional effectiveness is a constant theme in district plans and activities; there is a strong expectation that instructional programs will be improved over time.
e. District recruitment, selection, and promotion policies are reviewed periodically to assure that creative, innovative building administrators are hired and retained.

Courter and Ward (1983); Enochs (1979); Everson, et al. (1986); Hallinger, et al. (1987); Murphy and Hallinger (1986, 1988); Levine and Lezotte (1989); Louis and Miles (1989); Purkey and Smith (1983); Schlechty (1985); Wilson and Corcoran (1988)

3.1.2 There are Policies and Procedures that Support Excellence in Student Performance

a. All district policies are reviewed to determine the effect they have on student performance. Policies are strengthened as necessary to increase support for specific district goals and for improving student performance in general.
b. Policies and procedures are established that focus on improving student performance and require ongoing improvement efforts at every level in the district. Guidelines provide a framework for action rather than specific steps.
c. Policies are developed which foster the development of clear goals in each school building and which encourage school staffs to translate these into measurable results.
d. School site management is in place and supported. District administrators share decision making regarding budget, staffing, and curriculum with school leaders.
e. Individual schools are required to generate action plans for improvement and carry them out; building principals are expected to be instructional leaders.
f. Expectations for participation in improvement efforts are established and enforced; building managers are included in district planning activities.

g. Regulations and requirements governing construction of school facilities are reviewed to insure that optimal physical environments are provided for teaching and learning.

Biester, et al. (1983); Courter and Ward (1983); David (1989); Everson, et al. (1986); Levine and Lezotte (1989); Peterson, Murphy, and Hallinger (1986, 1988); Murphy, et al. (1987); Purkey and Smith (1983); Schlechty (1985); Squires (1983); Wilson and Corcoran (1988)

3.2 CURRICULUM

3.2.1 Curriculum Planning Ensures Continuity

a. Planning for curriculum and instruction is consistent at the district, school and classroom levels; district frameworks, guidelines and quality standards unify efforts districtwide.
b. A limited number of priority objectives are identified and used to clarify what students are expected to learn. Objectives are sequenced by grade level, reviewed for technical quality, specificity and clarity, and targeted for students according to development level and what they are expected to learn.
c. Objectives are selected which represent a range of learnings and can be taught within an established timeframe.
d. Learning materials, available space, and special facilities, staff and other instructional resources are identified and catalogued by objective or goal area.
e. Resources are matched to objectives, checked for accuracy and alignment, and matched to student development levels. Instructional strategies may also be identified and documented, especially for high priority objectives.
f. Districtwide curriculum alignment and review efforts are conducted to insure high quality of instruction and consistency across schools.
g. District staff provide direct support for building and classroom curriculum efforts; superintendents, in particular, take an active role in collaborating with schools on curriculum and instruction.

Behr and Bachelor (1981); David (1989); Denham and Lieberman (1980); Doherty and Peters (1981); Everson, et al. (1986); Hord and Huling-Austin (1987); Murphy and Hallinger (1986, 1988); Niedermeyer and Yelon (1981); Wilson and Corcoran (1988)

3.3 ASSESSMENT

3.3.1 Student Learning is Checked Regularly

a. Information about student performance is collected and summarized at the district level. Strengths and weaknesses are identified; reports are prepared and shared throughout the community; special emphasis is placed on progress related to district goals and priorities.
b. Assessment efforts are coordinated. District-level planning eliminates duplication of effort and ensures quality at all levels; assessments are regular, routine and cause minimum disruption of classroom instruction.

c. Alignment between tests and the curriculum is regularly checked and systematically improved.

d. At the district level, clearly stated assessment procedures are carried out by district staff. Major tests are announced well in advance to allow time for building and classroom scheduling. There are specific routines for scoring, storing, reporting, and analyzing results; results are reported quickly.

e. Assessment results are used to evaluate programs and target areas for improvement.

f. District staff provide direct support for building- and classroom-level assessment efforts.

Bachelor (1982); Behr and Bachelor (1981); Everson, et al. (1986); Hord and Huling-Austin (1987); Levine and Lezotte (1989); Levine and Stark (1982); Murphy and Hallinger (1986, 1988); Murphy, et al. (1987); Niedermeyer and Yelon (1981)

3.4 DISTRICT-SCHOOL INTERACTIONS

3.4.1 Improvement Efforts are Encouraged, Supported, and Monitored

a. District leaders delegate much of the responsibility for school improvement to principals and leadership teams within individual buildings, while at the same time providing guidance and support for school improvement efforts.

b. District staff make building staff aware of promising practices from inside and outside the district, encourage their use, and work with interested building staffs during implementation.

c. District supervisors monitor implementation of policies and procedures in individual schools; they provide advice, clarifications, and technical feedback and channel support services. In particular, they check on the progress of improvement efforts.

d. Instructional support services staff assist local schools in their improvement efforts. Staff provide consultation, materials development, and training assistance on call; support services staff are responsive to expressed building needs.

e. A resource pool is allocated for use in building level improvement projects. District-level departmental budgets include resource items specifically related to the attainment of district goals and priorities.

f. Building managers participate in ongoing programs of staff development focused on strengthening instructional leadership skills; building administrators are also encouraged to pursue other professional development activities.

g. District leaders protect schools from political or economic turbulence which might disrupt classroom instruction.

Berman and McLaughlin (1979); Biester, et al. (1984); David (1989); Everson, et al. (1986); Gersten, et. al. (1986); Huberman and Miles (1984); Levine and Lezotte (1989); Levine and Stark (1982); Little (1981); Louis and Miles (1989); Peterson, Murphy, and Hallinger (1986, 1988); Murphy, et al. (1987); Purkey and Smith (1983); Schlechty (1985); Squires (1983); Stallings (1981); Wilson and Corcoran (1988)

3.4.2 Excellence is Recognized and Rewarded

a. Superintendents are personally involved in the supervision and evaluation of principals whenever possible.

b. District leaders establish award programs for schools, administrators, teachers and students; they take a visible role in recognizing excellence. District award programs complement school award programs.
c. Staff awards are based on contributions made to improving student performance; requirements and procedures are clear; recognition is based on comparison to standards rather than comparison to peers.
d. District monitoring of school operations and improvement efforts is accompanied by recognition of successes.

David (1989); Enochs (1979); Everson, et al. (1986); Louis and Miles (1989); Murphy and Hallinger (1988); Murphy, Hallinger, and Peterson (1985); Murphy, et al. (1987); Wilson and Corcoran (1988)

Effective Schooling Research Bibliography

Introduction

Literature related to effective schooling has been gathered together in this bibliography. Research reports, syntheses, meta-analyses, reviews, and analytical commentaries are included. References listed in the preceeding section, plus many others, can be found here in full bibliographic form.

Each reference has been classified according to its major theme. The six parts of the research base, as described in the introduction to this document, comprise the classification categories. Each reference includes a letter code at the end of the citation relating the reference to a particular part of the research base. The codes are as follows:

- (A) School Effects
- (B) Teacher Effects
- (C) Instructional Leadership
- (D) Curriculum Alignment
- (E) Program Coupling
- (F) Educational Change

Placing a reference in one category does not imply an exclusive focus in that category. Many authors address several effectiveness issues in a single study or review.

For those who wish to delve more deeply into topics addressed in the preceding pages, but do not have time to read every document cited in the bibliography, we have identified an array of high-quality summaries and reviews. These are marked with an asterisk (*).

Finally, we need to remind readers that this bibliography is not comprehensive. While we believe that the core of the effectiveness literature is well represented, some studies not cited here may well be important in furthering the understanding of school effectiveness.

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School Improvement Research Series

Close-Up #7

Expectations and Student Outcomes

Kathleen Cotton

Introduction

> ...You see, really and truly, apart from the things anyone can pick up (the dressing and the proper way of speaking, and so on), the difference between a lady and a flower girl is not how she behaves, but how she's treated. I shall always be a flower girl to Professor Higgins, because he always treats me as a flower girl, and always will; but I know I can be a lady to you, because you always treat me as a lady, and always will.

With this quotation from George Bernard Shaw's play, *Pygmalion*, Robert Rosenthal and Lenore Jacobson conclude their 1968 publication, *Pygmalion in the Classroom*. Just as the character, Eliza Doolittle, suggests that a person's place in society is largely a matter of how he or she is treated by others, the Rosenthal/Jacobson study concluded that students' intellectual development is largely a response to what teachers expect and how those expectations are communicated.

The original Pygmalion study involved giving teachers false information about the learning potential of certain students in grades one through six in a San Francisco elementary school. Teachers were told that these students had been tested and found to be on the brink of a period of rapid intellectual growth; in reality, the students had been selected at random.

At the end of the experimental period, some of the targeted students—and particularly those in grades one and two—exhibited performance on IQ tests which was superior to the scores of other students of similar ability and superior to what would have been expected of the target students with no intervention.

These results led the researchers to claim that the inflated expectations teachers held for the target students (and, presumably, the teacher behaviors that accompanied those high expectations) actually *caused* the students to experience accelerated intellectual growth.

Few research studies in the field of education have generated as much attention and controversy among educators, researchers, and the general public as Rosenthal and Jacobson's Pygmalion study. Theorists argued about the psychological validity of "expectancy effects." Researchers set up attempts to replicate Pygmalion's findings. And in the popular press, articles began appearing which used the Pygmalion findings as a springboard for the claim that perhaps "Johnny can't read" because his teachers don't have faith in his abilities and don't encourage him, particularly if he is poor or a member of a minority group. Other articles looked at the positive side, giving teachers and parents the message that they could improve children's school performance dramatically by communicating high expectations to them.

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In the years since the original Pygmalion study was published, a great many additional studies have been undertaken. Several investigators (Snow 1969; Thorndike 1968; Wineburg 1987) have examined Rosenthal and Jacobson's study and found technical defects serious enough to cast doubt upon the accuracy of its findings. Some replication experiments seemed to confirm the Pygmalion findings, and others failed to do so. Other researchers conducted studies which sought to identify the ways that expectations are communicated to students. Meanwhile, the popular press, for the most part, continued to treat the Pygmalion findings as gospel and sometimes cast aspersions on America's teachers for the failure of some children to learn, claiming that teachers' low expectations were either creating or sustaining the problem.

Whether one is inclined to accept or doubt the findings of the Pygmalion study and other research supporting "self-fulfilling prophecy" effects, it is clear that educators and the general public were and are very interested in the power of expectations to affect student outcomes.

Definitions

To expect something is to look forward to its probable occurrence or appearance, according to the *American Heritage Dictionary of the English Language*. **Teacher expectations** refer to inferences that teachers make about the future academic achievement of students (Cooper and Good 1983). **Schoolwide expectations** refer to the beliefs held by the staff as a whole about the learning ability of the student body.

As originally described by Merton (1948), a **self-fulfilling prophecy** occurs when a false definition of a situation evokes a new behavior which makes the originally false conception come true. Thus, the Pygmalion study is seen as a self-fulfilling prophecy effect, because while the imminent intellectual blooming of target students was "false information" given to teachers, believing the information presumably led teachers to act in such a way as to make the false conception a reality. Finally, **sustaining expectation effects** are said to occur when teachers respond on the basis of their existing expectations for students rather than to changes in student performance caused by sources other than the teacher (Cooper and Good 1983). As Good and Brophy (1984) express the difference:

> Self-fulfilling prophecies are the most dramatic form of teacher expectation effects, because they involve changes in student behavior. Sustaining expectations refer to situations in which teachers fail to see student potential and hence do not respond in a way to encourage some students to fulfill their potential. In summary, self-fulfilling expectations bring about change in student performance, whereas sustaining expectations prevent change." (p. 93)

The workings of these two kinds of expectation effects are detailed in the section on research findings.

The Research Base on Schoolwide and Teacher Expectations

The present report is supported by 46 documents which offer research evidence about the relationship between expectations and student outcomes (achievement, IQ scores, and attitudes). An additional 21 documents in the bibliography provide information on related topics, such as how teacher expectations develop and how to minimize the negative effects associated with low expectations.

Of the 46 key documents, 22 are primary sources (studies and evaluations), 23 are secondary sources (reviews and meta-analyses), and one presents the results of both a study and a review effort. Twelve reports are concerned with the effects of schoolwide expectations, 30 focus specifically on the effects of teacher expectations in classroom or experimental settings, and four look at both schoolwide and in-classroom expectation effects.

Nineteen of the documents are concerned with students at the elementary level, seven focus on secondary students, nineteen report findings regarding the entire elementary-secondary range, one presents findings regarding postsecondary subjects, and one is concerned with elementary, secondary, and postsecondary students.

The investigations focused on a variety of outcome areas, including student **achievement** in areas such as reading, mathematics, language arts, French, history, geography, physics, and biology (34); **IQ measures** (10); student **attitudes** toward school, toward particular subject areas, or toward the expectations of them which they perceived their teachers to hold (15); **social behavior** (5); and **self-efficacy/expectations for success** (9). Several of the investigations were concerned with more than one outcome area.

Schoolwide Expectations and Their Effects

Every study retrieved for this analysis which sought to identify the critical components in effective schools included high expectations for student learning among the essential variables identified. The presence of high expectations is cited at or near the top of each investigator's list of essential elements, along with such related factors as strong administrative leadership, a safe and orderly environment, schoolwide focus on basic skill acquisition above all other goals, and frequent monitoring of student progress.

Low-achieving schools, meanwhile, are usually found to lack several of these elements. Staff members in these schools generally view their students as being quite limited in their learning ability and do not see themselves as responsible for finding ways to raise those students' academic performance. Low achievement levels are usually attributed to student characteristics rather than the school's managerial and instructional practices.

How are high expectations for students communicated among staff members, to students, and to parents? Researchers cite the following:

- **Setting goals which are expressed as minimally acceptable levels of achievement** rather than using prior achievement data to establish ceiling levels beyond which students would not be expected to progress (Good 1987)
- **Developing and applying policies which protect instructional time**, e.g., policies regarding attendance, tardiness, interruptions during basic skills instructional periods, etc. (Murphy, et al., 1982)
- **Developing policies and practices which underscore the importance of reading**, i.e., written policies regarding the amount of time spent on reading instruction daily, use of a single reading series to maintain continuity, frequent free reading periods, homework which emphasizes reading; frequent sharing of student reading progress with parents, and strong instructional leadership (Hallinger and Murphy 1985; Murphy, et al. 1982)
- **Establishing policies which emphasize the importance of academic achievement to students**, e.g., minimally acceptable levels of achievement to qualify for participation in extracurricular activities, regular notification to parents when academic expectations aren't being met, etc. (Murphy and Hallinger 1985)
- Having **staff members who hold high expectations for themselves** as leaders and teachers, taking responsibility for student performance (Brookover and Lezotte 1979; Edmonds 1979; Murphy and Hallinger, 1985; Murphy, et al. 1982)
- Using **slogans which communicate high expectations**, e.g., "academics plus," "the spirit of our school," etc. (Newberg and Glatthorn 1982)
- Establishing a **positive learning climate**, i.e., the appearance of the physical plant and the sense of order and discipline that pervades both noninstructional and instructional areas (Edmonds, 1979; Newberg and Glatthorn 1982; Murphy, et al., 1982)
- **"Insistent coaching"** of students who are experiencing learning difficulty (Good 1987; Taylor 1986-87)

In addition, Murphy, et al. (1982) state that

> Perhaps the most important thing schools can do to promote high expectations is to frame school purpose policies in terms of one or two academic goals, which can in turn provide the framework for all other school activity (p.24).

Teacher Expectations

Teacher expectations are, of course, a component of schoolwide expectations. In addition, researchers have conducted numerous detailed examinations of the ways teacher expectations are communicated to students in classroom settings and how these messages influence student outcomes.

The most important finding from this research is that **teacher expectations can and do affect students' achievement and attitudes**. Among the research materials supporting this paper, all that address this topic found relationships between expectations and student outcomes.

How do teacher expectations affect student outcomes? Most researchers accept Good and Brophy's (1980) description of the process:

1. Early in the school year, teachers form differential expectations for student behavior and achievement.
2. Consistent with these differential expectations, teachers behave differently toward various students.
3. This treatment tells students something about how they are expected to behave in the classroom and perform on academic tasks.
4. If the teacher treatment is consistent over time and if students do not actively resist or change it, it will likely affect their self-concepts, achievement motivation, levels of aspiration, classroom conduct, and interactions with the teacher.
5. These effects generally will complement and reinforce the teacher's expectations, so that students will come to conform to these expectations more than they might have otherwise.
6. Ultimately, this will affect student achievement and other outcomes. High-expectation students will be led to achieve at or near their potential, but low-expectation students will not gain as much as they could have gained if taught differently (Restated in Good 1987, p. 33).

While this is a useful model for describing the way that expectations can affect student outcomes, researchers offer several cautions about its usefulness for describing what occurs in classrooms. For one thing, they point out that full-blown **self-fulfilling prophecy effects** can occur only when all the elements in the model are present. While this can and sometimes does occur, most researchers have concluded that teacher expectations are not generally formed on the basis of "false conceptions" at all. Rather, they are based on the best information available about the students (Brophy 1983; Brophy and Good 1970; Clifton 1981; Cooper 1983, 1984; Good 1987, 1982; Good and Brophy, 1984; Meyer 1985; Raudenbush 1984; and Wineburg 1987).

However, even though the initial expectations formed by teachers may be realistic and appropriate, researchers have found that **sustaining expectation effects** can occur and can also limit students' learning and self-concept development. As noted by Good (1987):

> For sustaining expectations to occur, it is only necessary that teachers engage in behaviors that maintain students' and teachers' previously formed low expectations (e.g., by giving low-expectation students only drill work, easy questions, etc.) (p. 34).

The Extent and Strength of Differential Treatment

How widespread is the practice of teachers' communicating differential expectations to students they perceive as having greater or lesser learning potential? While some researchers have concluded that differential treatment is very widespread and very damaging to those students perceived as low potential, most do not agree. Instead, their work has led them to conclude that the majority of teachers both form initial expectations on the basis of viable information and are able to adjust their expectations and instructional approaches as changes in students' performance occur (Brophy 1983; Brophy and Good 1970, 1976; Cooper and Good 1983; Cooper and Tom 1984; Good 1982, 1987; Meyer 1985; Raudenbush 1984; and Wineburg 1987). This is particularly true with experienced teachers and with teachers who know their students well.

These researchers and others have, however, found that a **minority** of teachers do: (1) hold unjustifiably low expectations for student achievement on the basis of factors such as race, gender, or socioeconomic status, which have nothing to do with learning potential; or (2) form initial expectations based on appropriate data, but then hold to these expectations so rigidly that changes in student skill or motivation levels are not noted or addressed.

How strong are the effects of teachers' expectancy communications on student learning? The research does not answer this question precisely, but it does give some indications of the extent of their influence. Meyer (1985) concluded that:

> The effects of teacher expectancies on students...surely occur, although not with the frequency or intensity that was suggested by earlier investigators (p. 361).

In his 1983 review of the teacher expectations research, Brophy estimated that five to ten percent of the variance in student performance is attributable to differential treatment accorded them based on their teachers' differential expectations of them. Various other researchers have accepted and quoted this estimate.

Five to ten percent is hardly the epidemic of mistreatment and negative outcomes perceived by some educators and members of the general public, but it is significant enough, particularly when compounded through year after year of schooling, to warrant concern. Researchers have also found that younger children are more susceptible to the effects of expectancy communications than are older students, and that communicating low expectations seems to have more power to lower student performance than communicating high expectations has to raise performance.

Much of the literature on teacher expectations calls attention to the fact that students do in fact have different ability levels and require different instructional approaches, materials, and rates. None of the authors whose work was reviewed for this report suggest that teachers should hold the same expectations for all students, nor that they should deliver identical instruction to them all. Rather, they focus on the problems created when differential treatment either creates or sustains differences in student performance which would probably not exist if students were treated more equitably.

How Inappropriate Expectations Are Formed

If the expectations held by some teachers are not based on appropriate information (such as cumulative folder data, recent achievement tests, etc.), then what are they based on? Brookover, et al. (1982), Cooper (1984), Good (1987), and others have identified numerous factors which can lead teachers to hold lower expectations for some students than others. These include:

- **Sex.** Lower expectations are often held for older girls—particularly in scientific and technical areas—because of sex role stereotyping.
- **Socioeconomic status.** Teachers sometimes hold lower expectations of students from lower SES backgrounds.
- **Race/ethnicity.** Students from minority races or ethnic groups are sometimes viewed as less capable than Anglo students.
- **Type of school.** Students from either inner city schools or rural schools are sometimes presumed to be less capable than students from suburban schools.
- **Appearance.** The expense or style of students' clothes and students' grooming habits can influence teachers' expectations.

- **Oral language patterns.** The presence of any nonstandard English speaking pattern can sometimes lead teachers to hold lower expectations.

- **Messiness/disorganization.** Students whose work areas or assignments are messy are sometimes perceived as having lower ability.

- **Readiness.** Immaturity or lack of experience may be confused with learning ability, leading to inappropriately low expectations.

- **Halo effect.** Some teachers generalize from one characteristic a student may have, thereby making unfounded assumptions about the student's overall ability or behavior.

- **Seating position.** If students seat themselves at the sides or back of the classroom, some teachers perceive this as a sign of lower learning motivation and/or ability and treat students accordingly.

- **Negative comments about students.** Teachers' expectations are sometimes influenced by the negative comments of other staff members.

- **Outdated theories.** Educational theories which stress the limitations of learners can lead to lowered expectations.

- **Tracking or long-term ability groups.** Placement in "low" tracks or groups can cause students to be viewed as having less learning potential than they actually have.

According to research, those teachers who hold low expectations for students based on factors such as those listed above are rarely acting out of malice; indeed, they are often not even aware that their low expectations have developed based on specious reasoning. Thus, efforts aimed at helping teachers to avoid harmful stereotyping of students often begin with activities designed to raise teachers' awareness of their unconscious biases.

Researchers and reviewers also note that putting too much faith in *appropriate* sources of information, such as test scores and cumulative folder information, can lead to unsuitable expectations and treatments. These writers warn that these data should not be viewed as the final truth about students' ability, but rather as guides for *initial* placement and instructional decisions.

How Differential Expectations Are Communicated To Students

Of course, merely *holding* certain expectations for students has no magical power to affect their performance or attitudes. Rather, it is the translation of these expectations into *behavior* that influences outcomes.

It is important to keep in mind that most teachers, as noted above, do *not* translate differential expectations into behaviors that inhibit students' academic growth. Instead, they seek and find ways to help each student reach his or her learning potential. Unfortunately, however, researchers have found that some teachers do interact with students for whom they hold low expectations in such a way as to limit their development. The types of differential treatment listed below are identified in the work of Brookover, et al. (1982); Brophy (1983); Brophy and Evertson (1976); Brophy and Good (1970); Cooper and Good (1983); Cooper and Tom (1984); Cotton (1989); Good (1987, 1982); Good, et al. (1980); Good and Brophy (1984):

- Giving low-expectation students fewer opportunities than high-expectation students to learn new material

- Waiting less time for low-expectation students to answer during class recitations than is given to high-expectation students

- Giving low-expectation students answers or calling on someone else rather than trying to improve their responses by giving clues or repeating or rephrasing questions, as they do with high-expectation students

- Giving low-expectation students inappropriate reinforcement, e.g., giving reinforcement which is not contingent on performance

- Criticizing low-expectation students for failure more often and more severely than high-expectation students and praising them less frequently for success

- Failing to give feedback to the public responses of low-expectation students
- Paying less attention to low-expectation students than high-expectation students, including calling on low-expectation students less often during recitations
- Seating low-expectation students farther from the teacher than high-expectation students
- Interacting with low-expectation students more privately than publicly and structuring their activities much more closely
- Conducting differential administration or grading of tests or assignments, in which high-expectation students—but not low-expectation students—are given the benefit of the doubt in borderline cases
- Conducting less friendly and responsive interactions with low-expectation students than high-expectation students, including less smiling, positive head nodding, forward leaning, eye contact, etc.
- Giving briefer and less informative feedback to the questions of low-expectation students than those of high-expectation students
- Asking high-expectation students more stimulating, higher cognitive questions than low-expectation students
- Making less frequent use of effective but time-consuming instructional methods with low-expectation students than with high-expectation students, especially when time is limited.

These kinds of differential treatment have been noted in the behavior of some teachers toward different **individuals** in classrooms, but they are also observed by researchers looking at teachers' behavior toward different ability **groups** in classrooms and in tracked **classrooms**. Students in low groups and tracks have been found to get less exciting instruction, less emphasis upon meaning and conceptualization, and more rote drill and practice activities than those in high reading groups and tracks (Brophy 1983; Cooper and Tom 1984; Good 1987; and Good and Brophy 1984). Researchers also note that the instructional environment in heterogeneous groups and classes is similar to that in high groups and tracks—more demanding, more opportunities to learn, and a warmer socioemotional climate.

As with the *formation* of expectations based on inappropriate factors, the *communication* of differential expectations is often unconscious on the part of teachers. Or, in cases where teachers are aware that they are practicing differential treatment, they often see this as appropriate to their students different ability levels and fail to perceive its harmful effects. Staff development specialists familiar with these phenomena advocate that preservice and inservice training programs work to raise teachers' awareness of their thinking and behavior with regard to expectations and of the potential negative effects of differential treatment.

Brattesani, et al. (1984), Cooper and Good (1983), Good (1987) and others have conducted research on student awareness of differential treatment and have found that students are generally very much aware of it in classrooms where it is pronounced. These researchers have also found that student attitudes—and particularly the attitudes of low-expectation students—are more positive in classrooms where differential treatment is low.

Researchers such as Brattesani (1984), Brophy (1983), Cooper and Tom (1984), Cooper, et al. 1982, Good (1987) and Marshall and Weinstein (1984) point out that the negative effects of differential teacher treatment can be either direct or indirect. Giving low-expectation students limited exposure to new learning material and less learning time inhibit their learning in very direct ways. Many of the kinds of differential treatment listed above, however, are indirect in their effects. That is, they give students messages about their capabilities, and to the extent that students believe and internalize those messages, their performance can come to reflect the teachers' beliefs about their ability. In this way, teacher expectation effects are said to be *mediated* by student perceptions.

Summary and Recommendations

Major findings presented in the research on schoolwide and teacher expectations include:

- Expectations, as communicated schoolwide and in classrooms, can and do affect student achievement and attitudes.
- High expectations are a critical component of effective schools.
- In effective schools, high expectations are communicated through policies and practices which focus on academic goals.
- Teacher expectations and accompanying behaviors have a very real—although limited—effect on student performance, accounting for five to ten percent of student achievement outcomes.
- Communicating low expectations has more power to limit student achievement than communicating high expectations has to raise student performance.
- Younger children are more susceptible to expectancy effects than are older students.
- Most teachers form expectations on the basis of appropriate information, such as cumulative folder data and change their expectations as student performance changes.
- A minority of teachers form expectations based on irrelevant factors such as students' socioeconomic status, racial/ethnic background, or gender.
- A minority of teachers see student ability as static, and thus do not perceive and respond to changes in students' performance in such a way as to foster their growth.
- A minority of teachers treat low-expectation students in ways likely to inhibit their growth, e.g., by exposing them to less learning material and material that is less interesting, giving them less time to respond to questions, and communicating less warmth and affection to them.
- Teachers who form expectations based on inappropriate data, are rigid and unchanging in their expectations, and/or treat low-expectation students in inhibiting ways are generally not aware of their harmful thinking and behaviors.
- When teachers engage in differential treatment of high- and low-expectation students, students are aware of these differences.
- Low-expectation students have better attitudes in classrooms where differential treatment is low than in classrooms where it is high.
- In the hands of some teachers, low groups and low tracks are subject to the same kinds of limiting treatment as are individual low-expectation students—with the same negative effects.
- The negative effects of differential teacher treatment on low-expectation students may be direct (less exposure to learning material) or indirect (treating students in ways that erode their learning motivation and sense of self-efficacy).
- Training can enable school staff members to become aware of their unconscious biases and differential treatment of students, and help them to make positive changes in their thinking and behavior.

Given these findings, what can be done to improve the ways teachers form expectations and communicate them, especially to students they perceive as having limited potential? The following recommendations are drawn from the work of Brophy (1983), Cooper and Tom (1984), Cotton (1989), Good and Brophy (1984), Marshall and Weinstein (1984), Patriarca (1986), and Woolfolk (1985):

- Avoid unreliable sources of information about students' learning potential, e.g., social stereotypes, the biases of other teachers, etc.
- Set goals (for individuals, groups, classrooms, and whole schools) in terms of floors (minimally acceptable standards), not ceilings; communicate to students that they have the ability to meet those standards.

- Use heterogeneous grouping and cooperative learning activities whenever possible; these approaches capitalize on students' strengths and take the focus off weaknesses.

- Develop task structures in which students work on different tasks, on tasks that can be pursued in different ways, and on tasks that have no particular right answer. This will minimize harmful comparisons.

- Emphasize that different students are good at different things and let students see that this is true by having them observe one another's products, performances, etc.

- Concentrate on extending warmth, friendliness, and encouragement to all students.

- Monitor student progress closely so as to keep expectations of individuals current.

- Give all students generous amounts of wait-time to formulate their answers during recitations; this will increase participation and improve the quality of responses.

- In giving students feedback, stress continuous progress relative to previous levels of mastery, rather than comparisons with statistical norms or other individuals.

- In giving students feedback, focus on giving useful information, not just evaluation of success or failure.

- When students do not understand an explanation or demonstration, diagnose the learning difficulty and follow through by breaking down the task or reteach it in a different way, rather than merely repeating the same instruction or giving up.

- In general, think in terms of stretching the students' minds by stimulating them and encouraging them to achieve as much as they can, not in terms of "protecting" them from failure or embarrassment.

The research of Marshall and Weinstein (1984) and other investigators indicates that teachers can be trained to view intelligence as a multi-faceted and continuously changing quality and to move away from holding and communicating unfounded or rigidly constrained expectations to their students. Given the power of teacher expectations to influence students' learning and their feelings about themselves, providing such teacher training is a good—perhaps essential—investment in our educational system.

Key References

Baksh, I.J., and Martin, W.B.W. "Teacher Expectation and the Student Perspective." *The Clearing House* 57 (1984): 341-343.

Presents the results of a large-scale survey of high school students regarding their response to having teachers who hold high academic expectations for them. A majority of students reacted negatively, believing that their teachers' expectations were extreme or unfair.

Bhusan, V. *Relationship of Teacher Attitude to the Environment of His/Her Class.* Paper presented at the Annual Meeting of the American Educational Research Association, Chicago, IL, March-April, 1985. (ED 260 118).

Compares the achievement levels and attitudes of secondary students whose teachers rated high on behaviors such as warmth, high expectations, trust, openness, and flexibility with the achievement and attitudes of students whose teachers were rated as "authoritarian, pessimistic, repressing, and reproachful." Classrooms of this latter group of teachers were characterized by friction, favoritism, dissatisfaction, and lower achievement levels.

Brattesani, K.A.; Weinstein, R.S.; and Marshall, H.H. "Student Perceptions of Differential Teacher Treatment as Moderators of Teacher Expectation Effects." *Journal of Educational Psychology* 76 (1984): 236-247.

Presents the results of two studies which examined the relationships among teacher expectations, students' perceptions of differential treatment accorded to students for whom teachers hold different expectations, student perceptions of teachers' treatment of them personally, and student achievement levels. Results indicate that differential teacher treatment emanating from different expectations sustains and even increases differences in student achievement.

Brookover, W.B.; Beady, C.; Flood, P.; Schweitzer, J.; and Wisenbaker, J. *School Social Systems and Student Achievement: Schools Can Make a Difference.* New York: Bergin, 1979.

Presents the results of a large-scale study of fourth and fifth graders, their teachers, and their principals in approximately 170 schools in the state of Michigan. A variety of social structure and school climate variables were examined in relation to student outcomes.

_____, and Lezotte, L.W. *Changes in School Characteristics Coincident With Changes in Student Achievement.* Occasional Paper No. 17. East Lansing, MI: Institute for Research on Teaching, Michigan State University, 1979. (ED 181 005).

Presents the results of an in-depth analysis of elementary schools, six of which were characterized by improving student achievement, and two of which exhibited declining student achievement. Identifies high teacher and principal expectations of students as one of the major features distinguishing the high- and low-achieving schools.

_____; Beamer, L.; Efthim, H.; Hathaway, D.; Lezotte, L.; Miller, S.; Passalacqua, J.; and Tornatzky, L. *Creating Effective Schools: An Inservice Program for Enhancing School Learning Climate and Achievement.* Holmes Beach, FL: Learning Publications, Inc., 1982.

Presents an inservice training program for school staff who want to improve student achievement through modifications in the school learning environment. Includes research on what constitutes an effective learning environment and the relationship between school staff expectations and student achievement.

Brophy, J.E. "Research on the Self-Fulfilling Prophecy and Teacher Expectations." *Journal of Educational Psychology* 75 (1983): 631-661.

Reviews the literature on self-fulfilling prophecy effects and concludes that a minority of teachers have major expectation effects on their students' achievement. Effects are found to be minimal for most teachers, because their expectations are generally quite accurate and open to corrective feedback.

_____, and Evertson, C.M. *Learning from Teaching: A Developmental Perspective.* Boston: Allyn and Bacon, 1976.

Reports the effects that teachers' behavior and expectations for their students have on student achievement and attitude. The students and teachers were observed in urban, elementary classrooms.

_____, and Good, T.L. "Teachers' Communication of Differential Expectations for Children's Classroom Performance: Some Behavioral Data." *Journal of Educational Psychology* 61 (1970): 365-374.

Investigates the relationship between teachers' perceptions of students' abilities and their manner of interacting with students in classroom settings. Twelve first graders and their teachers were observed and their behaviors recorded. Teachers consistently favored high-ability over low-ability students in demanding and reinforcing quality performance.

Clifton, R.A. "Ethnicity, Teachers Expectations, and the Academic Achievement Process in Canada." *Sociology of Education* 54 (1981): 291-301.

Investigates the effects of different variables, including teacher expectations, on the academic achievement of French- and German-speaking ninth graders in Ontario, Canada.

Cooper, H.M., and Good, T.L. *Pygmalion Grows Up: Studies in the Expectation Communication Process.* New York: Longman Press, 1983.

Reviews research on the effects of teacher expectations, presents a model of the way these effects occur, and describes several studies whose results led to formulation and refinement of the model.

_____, and Tom, D.Y.H. "Teacher Expectation Research: A Review with Implications for Classroom Instruction." *The Elementary School Journal* 85 (1984): 77-89.

Reviews research on the effects of teacher expectations on student achievement and attitudes. Outlines research findings on the behaviors through which expectations are communicated. Offers a model of the ways expectations influence outcomes, and provides recommendations for minimizing the negative effects of expressing low expectations.

_____; Findley, M.; and Good, T. "Relations Between Student Achievement and Various Indexes of Teacher Expectations," *Journal of Educational Psychology* 74 (1982), 577-579.

Examines the effect of teacher expectations on student reading achievement. Sixth graders in thirteen classes and their teachers participated. Changes in student achievement levels were affected by teachers' perceptions of student ability.

Cotton, K. *Classroom Questioning. Close-Up #5.* Portland, OR: Northwest Regional Educational Laboratory, 1989.

Synthesizes findings from 37 studies of the relationship between teachers' questioning behaviors and student achievement and other outcomes. Supports the use of longer wait-times during questioning sessions and increases in higher cognitive questions.

Crohn, L. *Toward Excellence: Student and Teacher Behaviors as Predictors of School Success.* Research Summary Report. Portland, OR: Northwest Regional Educational Laboratory, 1983. (ED 242 704).

Provides research findings and offers recommendations regarding the effects of teacher and student attitudes and behaviors. Cites research to the effect that teacher expectations are often based on matters unrelated to student ability and that the communication of high or low expectations profoundly affects student performance.

Dusek, J.B., (Ed.). *Teacher Expectancies.* Hillsdale, NJ: Lawrence Erlbaum Associates, Publishers, 1985.

Presents a series of articles on the subject of teacher expectancies, including (1) historical trends and methodological concerns, (2) theoretical formulations, (3) individual differences and teacher expectancies, (4) communicating and receiving expectancies, and (5) summary and implications.

Edmonds, R. "Effective Schools for the Urban Poor." *Educational Leadership* 37 (1979), 15-18.

Reviews research on school factors which increase the achievement levels and enhance the school attitudes of poor, inner-city children. Identifies high expectations as a critical component of effective schooling.

Feldman, R.S., and Theiss, A.J. "The Teacher and Student as Pygmalions: Joint Effects of Teacher and Student Expectations." *Journal of Educational Psychology* 74 (1982): 217-223.

Examines the reciprocal effects of teacher and student expectations on performance and attitudes. This non-naturalistic study involved 144 female college students, some of whom were given "teacher" tasks and some of whom were given "student" tasks. Participants were given preconceptions about their "teacher" or "student." The major findings were that teacher expectations did influence student achievement and that preconceptions influenced both teacher and student attitudes.

Gaddy, G.D. "High School Order and Academic Achievement." *American Journal of Education* 96 (1988): 496-518.

Reviews several major studies on school effectiveness to clarify the relationship between discipline/order and achievement. One conclusion is that holding high learning expectations for students is an essential part of an effective school climate.

Good, T.L. "Two Decades of Research on Teacher Expectations: Findings and Future Directions." *Journal of Teacher Education* 38 (1987): 32-47.

Summarizes research findings regarding the effects of teacher expectations on student achievement and attitudes. Discusses self-fulfilling prophecy effects, sustaining expectations effects, and the ways teacher expectations impact individual students, groups within classrooms, whole classrooms, and entire schools.

_____. "How Teachers' Expectations Affect Results." *American Education* 18 (1982): 25-32.

Summarizes research conducted by the author and Jere Brophy on the effects of teachers' expectations on student attitudes and achievement. Also discusses the expectations communication model used to conduct the research.

_____; Cooper, H.; and Blakey, S. "Classroom Interaction as a Function of Teacher Expectations, Student Sex, and Time of Year." *Journal of Educational Psychology* 72 (1980): 378-385.

Examines the effects of teacher expectations and student sex on teachers' treatment of students and seeks to identify changes in differential treatment over time. Twelve students in third, fourth, and fifth grade classes participated. Teachers' behaviors favored high-ability students in ways congruent with the findings of most other research studies in this area.

_____, and Brophy, J.E. "Teacher Expectations." Chapter 4 in *Looking in Classrooms*. New York: Harper & Row, 1984, 93-121.

Offers research evidence regarding the ways that teacher expectations are formed, how they are communicated to students, and how they influence student self-perceptions and achievement. Also provides recommendations for ways that teachers can minimize communicating expectations that have negative impacts on students.

Hallinger, P., and Murphy, J. "Characteristics of Highly Effective Elementary School Reading Programs." *Educational Leadership* 52 (1985): 39-42.

Identifies schoolwide policies and practices believed to be positively related to the higher-than-average reading achievement levels in eight elementary schools. In the two schools which were spotlighted, policies and practices related to time allocations for reading, curriculum, access to books, emphasis on literature, homework, support services, progress reports, the school improvement program, and instructional leadership were identified.

Hillman, S.J. *Contributions to Achievement: The Role of Expectations and Self-Efficacy in Students, Teachers, and Principals.* Paper presented at the Annual Meeting of the American Educational Research Association, New Orleans, LA, April 1984. (ED 247 290).

Compares ten high-achieving schools with ten low-achieving schools in terms of students', teachers', and principals' achievement expectations for students and their sense of self-efficacy. High achieving schools were characterized by higher expectations and a stronger sense of self-efficacy.

Kester, S.W., and Letchworth, G.A. "Communication of Teacher Expectations and Their Effects on Achievement and Attitudes of Secondary School Students." *The Journal of Educational Research* 66 (1972): 51-55.

Reports the results of a study in which 150 seventh graders and their teachers participated. Teachers were given false information to the effect that the students were intellectually gifted to determine whether their increased expectations would lead to improvements in student achievement and attitude. No significant changes were noted, although teachers did have more interactions with students they believed to be gifted.

Marshall, H.H., and Weinstein, R.S. *"It's Not How Much Brains You've Got, It's How You Use It"*: A Comparison of Classrooms Expected to *Enhance or Undermine Students' Self-Evaluations*. Washington, DC: National Institute of Education; Bethesda, MD: National Institute of Mental Health; Chicago, IL: Spencer Foundation, 1985. (ED 259 027).

Compares the classroom management techniques and instructional strategies used in two fifth grade classrooms—one in which students perceived that the teacher treated different students very differently, and one in which students perceived that the teacher treated all students similarly. Students treated similarly held higher achievement expectations for themselves.

_____, and Weinstein, R.S. "Classroom Factors Affecting Students' Self-Evaluations: An Interaction Model." *Review of Educational Research* 54 (1984): 301-325.

Draws upon a large body of research to identify the factors that influence students' evaluations of their own learning ability. Presents a model which describes the interactions between and among those factors. Recommends classroom practices which de-emphasize comparisons among students.

Meyer, W.J. "Summary, Integration, and Prospective." Chapter 14 in Dusek, J.B. (Ed.). *Teacher Expectancies*. Hillsdale, NJ: Lawrence Erlbaum Associates Publishers, 1985, 353-371.

Reviews major points of authors represented in this collection of writings on teacher expectations and offers recommendations for both researchers and theoreticians working in this area.

Miskel, C., and Bloom, S. *Expectancy Climate and School Effectiveness*. Lawrence, KS: Learning Disabilities Institute, 1982. (ED 214 246).

Examines the relationship of "expectancy climate"—what staff expect of themselves and their students—and the school effectiveness indicators of adaptability, perceived goal attainment, teacher job satisfaction, and student attitudes. Data collected from teachers and students in 89 Kansas schools indicated that all four variables are related to expectancy climate.

Murphy, J., and Hallinger, P. "Effective High Schools—What Are the Common Characteristics ?" *NASSP Bulletin* 69 (1985), 18-22.

Draws from data collected during a nationwide study of effective secondary schools to identify the 18 most effective high schools in California and the characteristics that make them effective. The presence of high expectations for student achievement and behavior was found to be a critical variable in these effective schools.

_____; Weil, M.; Hallinger, P.; and Mitman, A. "Academic Press: Translating High Expectations into School Policies and Classroom Practices." *Educational Leadership* 40 (1982): 22-26.

Provides an overview of research on effective school and classroom practices and offers research-based guidelines for communicating high learning expectations to students through schoolwide policies and classroom practices.

Newberg, N.A., and Glatthorn, A.A. *Instructional Leadership: Four Ethnographic Studies on Junior High School Principals*. Executive Summary. Philadelphia, PA: Pennsylvania University, 1982. (ED 236 809).

Reports the results of a study of the behaviors of principals in four unusually successful inner-city junior high schools. Close attention to instructional goals, use of meaningful slogans, an orderly learning environment, and attention to the curriculum were commonalities noted among these successful principals.

Patriarca, L.A., and Kragt, D.M. "Teacher Expectations and Student Achievement: The Ghost of Christmas Future." *Curriculum Review* 25 (1986): 48-50.

Presents study results, discusses the teacher expectation research, and offers guidelines to help teachers minimize self-fulfilling prophecy effects—especially on low-track students in mathematics.

Raudenbush, S.W. "Magnitude of Teacher Expectancy Effects on Pupil IQ as a Function of the Credibility of Expectancy Induction: A Synthesis of Findings From 18 Experiments." *Journal of Educational Psychology* 76 (1984): 85-97.

Applies the technique of meta-analysis to 18 studies of the effect of teacher expectations on student IQ scores. In general, expectancy effects on IQ were either nonexistent or nonsignificant. The evidence also supported the hypothesis that the better the teachers know their pupils at the time of expectancy induction, the smaller the treatment effect. Younger children were more susceptible to expectancy effects than older children.

Rosenthal, R. "Pygmalion Effects: Existence, Magnitude, and Social Importance." *Educational Researcher* 16 (1987): 37-40.

Replies to Wineburg's essay in this same issue (see below), and claims that meta-analytic work conducted with the teacher expectations research since the original Pygmalion study demonstrates that "there is a phenomenon to be explained...[and] that the phenomenon is nontrivial in magnitude."

_____, and Jacobson, L. *Pygmalion in the Classroom: Teacher Expectation and Pupils' Intellectual Development.* New York: Holt, Rinehart and Winston, Inc., 1968.

Describes a research study in which efforts were made to manipulate teacher expectations for student achievement to see if these expectations would be fulfilled. First through sixth graders in one school participated. Some of the children whose teachers were told they had exceptional abilities, outperformed their peers on IQ measures (particularly in grades one and two).

Smith, M.L. "Teacher Expectations." *Evaluation in Education* 4 (1980): 53-55.

Presents the results of a meta-analysis of 47 studies on the effects of teacher expectations on student achievement. Teacher behavior was found to vary in relation to teacher expectations "to a modest degree," and teacher expectations had a stronger effect on achievement than on IQ.

Snow, R.E. "Unfinished Pygmalion." *Contemporary Psychology* 14 (1969): 197-200.

Critiques the 1968 Rosenthal and Jacobson publication, *Pygmalion in the Classroom*, calling attention to technical flaws in the design of the Pygmalion research.

Stockard, J., and Mayberry, M. *The Relationship Between School Environments and Student Achievement: A Review of the Literature.* Eugene, OR: Division of Educational Policy and Management, College of Education, University of Oregon, 1986.

Reviews research on the effects of school and community factors on student achievement and attitudes. Schoolwide and classroom expectations for high student achievement and positive social behavior were among the strongest predictors of these outcomes.

Taylor, S.E. "The Impact of An Alternative High School Program on Students Labeled 'Deviant'." *Educational Research Quarterly* 11 (1986-87): 8-12.

Presents the results of a survey of students participating in an alternative high school program. Project EASE participants, who had experienced school failure in conventional settings and succeeded in

the alternative program, cited caring, an informal, person-centered atmosphere and high teacher expectations as the major causes of the changes in their attitude and performance.

Thorndike, R.S. "Review of Pygmalion in the Classroom." *American Educational Research Journal* 5 (1968): 708-711.

Takes issue with the findings of Rosenthal and Jacobson's 1968 Pygmalion study and offers evidence that the data from that study do not justify the conclusions drawn by the researchers.

Weinstein, R.S., and Marshall, H.H. *Ecology of Students' Achievement Expectations.* Executive Summary. Berkeley, CA: California University; Washington, DC: National Institute of Education, 1984. (ED 257 805).

Compares the classroom management methods, instructional strategies, and attitudes toward students of first, third, and fifth grade teachers, some of whom were perceived by their students as treating different students very differently, and some of whom were perceived as treating students similarly. Attitudes of students in low-differential classrooms were more positive; achievement results were mixed.

Wineburg, S.S. "The Self-Fulfillment of the Self-Fulfilling Prophecy." *Educational Researcher* 16 (1987): 28-37.

Critiques the original Pygmalion study by Rosenthal and Jacobson and other research supporting the existence of self-fulfilling prophecy effects. Discusses reasons why people wish to believe in self-fulfilling prophecies.

_____. "Does Research Count in the Lives of Social Scientists?" *Educational Researcher* 16 (1987): 42-44.

Responds to critiques from Rosenthal and Rist regarding his self-fulfilling prophecy article appearing in this same issue (see above). Offers additional data and commentary to demonstrate that Pygmalion effects have not been proven by research.

Woolfolk, A.E., and Brocks, D.M. "The Influence of Teachers' Nonverbal Behaviors on Students' Perceptions and Performance." ***The Elementary School Journal*** **85(1985), 513-528.**

Reviews research on the effects of teachers' nonverbal behaviors on students' achievement and attitudes. Identifies implications for teachers' classroom behavior and recommendations for further research.

Other References

Arganbright, J.L. "Teacher Expectations—A Critical Factor for Student Achievement." *NAASP Bulletin* 67 (1983): 93-95.

Draws from the research on teacher expectations to discuss factors which influence teachers' development of achievement and behavioral expectations for their students.

Arnold, G.H. *An Interpretive Analysis of Teacher Expectations in Early Childhood Education.* No publisher indicated, 1985. (ED 266 877).

Investigates the ways that teachers' expectations develop, the views teachers hold about "good" and "bad" students, the ways teacher expectations influence the lives of the children they teach, and the ways teachers notions about the "model" student affect the development and implementation of the curriculum.

Bracey, G.W. "Pygmalion: Yes or No?" *Phi Delta Kappan* 69 (1988): 686-687.

Reviews a 1987 *Educational Researcher* article by Samuel Wineburg challenging the reality of the educational self-fulfilling prophecy.

Carr, M., and Kurtz, B.E. *Teachers' Perceptions of Students' Metacognition, Attributions, and Self-Concept.* Paper presented at the Annual Meeting of the American Educational Research Association, San Francisco, CA, 1989.

Seeks to determine the accuracy and the predictors of teachers' evaluations of their students in the areas of metacognition and motivation. Fifty-four third graders and their teachers participated. Teachers were found to attribute better metacognition, higher self-concept, and stronger effort to high achievers, even when these attributions were unfounded.

Cecil, N.L. "Black Dialect and Academic Success: A Study of Teacher Expectations." *Reading Improvement* 25 (1988): 34-38.

Investigates the effects on teacher expectations produced by teachers listening to tapes of second graders speaking standard English and those speaking black dialect. Though all children had similar IQ test scores, teachers had higher expectations for those speaking standard English.

Darley, J.M., and Fazio, R.H. "Expectancy Confirmation Processes Arising in the Social Interaction Sequence." *American Psychologist* 35 (1980), 867-881.

Presents a model of the process by which self-fulfilling prophecy effects occur and offers recommendations for further research on this topic.

Dusek, J.B., and Joseph, G. "The Bases of Teacher Expectancies: A Meta-Analysis." *Journal of Educational Psychology* 75 (1983): 327-346.

Presents results of a meta-analysis of 77 studies of the factors on which teacher expectations of student achievement and behavior are based. Factors found to influence teacher expectations included attractiveness, student classroom conduct, cumulative folder information, race, and social class. Unrelated factors included gender and one- or two-parent family structure.

Farley, J.R. "Raising Student Achievement Through the Affective Domain." *Educational Leadership* 39 (1982): 502-503.

Provides a brief overview of the Teacher Expectations and Student Achievement (TESA) program developed by the Los Angeles County Schools in 1971. Suggestions are offered to staff developers for ways to make the TESA training maximally interesting and meaningful to participating teachers.

Good, T.L., and Weinstein, R.S. "Teacher Expectations: A Framework for Exploring Classrooms." Chapter 6 in Zumwalt, K.K. (Ed.). *Improving Teaching: 1986 ASCD Yearbook*. Alexandria, VA: Association for Supervision and Curriculum Development, 1986, 63-85.

Describes observational studies of the ways that teachers communicate expectations in classrooms. Identifies needs for improvement in the classrooms observed and suggests ways that coaches might work with the teachers in question to improve their performance.

Grant, L., and Rothenberg, J. "The Social Enhancement of Ability Differences: Teacher-Student Interactions in First- and Second-Grade Reading Groups." *The Elementary School Journal* 87 (1986): 29-49.

Presents the results of a study of ability grouping strategies and effects in eight elementary classrooms. Concludes that ability grouping for reading is both a cause and an effect of teacher expectations, and that this expression of expectations is academically and socially damaging to students placed in "low" groups.

Grayson, D.A. *Evaluating the Impact of the Gender Expectations and Student Achievement (GESA) Program*. Paper presented at the Annual Meeting of the American Educational Research Association, Washington, DC, April 1987. (ED 283 881).

Describes the GESA program, which was developed to reduce the disparity in the treatment received by boys and girls in the classroom and to improve instructional materials and the learning environment for all children. Discusses program

implementation and a validation study conducted in California.

Guskey, T.R. "The Effects of Change in Instructional Effectiveness on the Relationship of Teacher Expectations and Student Achievement." *Journal of Educational Research* 75 (1982): 345-349.

Examines the effects of training to improve instructional effectiveness on the relationship between teacher expectations and student outcomes. The correlations between teachers' initial expectations for students' achievement and students' actual outcomes were lower for control teachers.

Kerman, S., and Martin, M. *Teacher Expectations and Student Achievement: Teacher Handbook*. Downey, CA: Los Angeles County Superintendent of Schools, 1980.

Contains participant materials for the Teacher Expectations and Student Achievement (TESA) training program designed to raise teachers' awareness of the ways expectations are communicated to students and to teach them how to interact with students equitably.

Kleinfeld, J., and McDiarmid, G.W. "Teacher Expectations as a Political Issue in Rural Alaska Schools." *Research in Rural Education* 4 (1987): 9-12.

Presents the results of a study revealing differential expectations for white and Native students on the part of teachers in rural Alaska schools. Discusses actions that teachers can take to raise expectations and achievement gradually and realistically.

Merton, R.K. "The Self-fulfilling Prophecy." *Antioch Review* 8 (1948): 193-210.

Introduces the term "self-fulfilling prophecy" and discusses the concept, particularly as it relates to the opportunities extended to various racial/ethnic groups and the achievements made by members of those groups.

Rampaul, W.E.; Singh, M; and Didyk, J. "The Relationship Between Academic Achievement, Self-Concept, Creativity, and Teacher Expectations Among Native Children in a Northern Manitoba School." *The Alberta Journal of Educational Research* 30 (1984): 213-225.

Examines relationships among several variables as these bear upon the education of native Canadian children in grades 3 and 4. Only one significant, positive relationship was discovered—between creativity and teacher expectations.

Rist, R.C. "Do Teachers Count in the Lives of Children?" *Educational Researcher* 16 (1987): 41-42.

Offers a critique of Wineburg's article on Pygmalion effects in this same issue (see above). Claims that Wineburg underplays the role of teachers' expectations in children's achievement.

Rolison, M. A., and Medway, F.J. "Teachers' Expectations and Attributions for Student Achievement: Effects of Label, Performance Pattern, and Special Education Intervention." *American Educational Research Journal* 22 (1985): 561-573.

Examines the effects on the formation of teacher expectations produced by information about a student's past academic performance, previous special education placements, and label. Previous performance and whether the student was labeled "learning disabled" or "mildly retarded" had the strongest influence on teacher expectations.

Short, G. "Teacher expectation and West Indian underachievement." *Educational Research* 27 (1985): 95-100.

Examines allegations (in the Interim Report of the Rampton Committee) that West Indian children are victims of a self-fulfilling prophecy within the British school system, being perceived as less capable than white students and thus treated less favorably. Concludes that available evidence does not substantiate the allegations

Special Populations Project. ***Teacher Expectations Action Packet. Research Strategies and Programs for Special Populations.*** Philadelphia, PA: Research for Better Schools, 1987. (ED 289 830).

Reviews research on the ways teacher expecttaions can influence student performance and offers research-based guidelines for giving praise to students, posing questions to them, and seating them in the classroom. Inservice programs focusing on teacher expectations are described.

Winifield, L.F. "Teacher Beliefs Toward Academically at Risk Students in Inner Urban Schools." *The Urban Review* 18 (1986): 253-268.

Teachers in five inner-city schools were interviewed to determine their attitudes and beliefs about their students' capabilities and their own level of responsibility in teaching those students.

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School Improvement Research Series

Close-Up #8

Educational Time Factors

Kathleen Cotton

Introduction

> A sense of the value of time—that is, of the best way to divide one's time into one's various activities—is an essential preliminary of efficient work.
>
> —Arnold Bennett

> Dost thou love life? Then do not squander time, for that is the stuff life is made of.
>
> —Benjamin Franklin

Western culture is rich with words of wisdom on the subject of time. The first of the above passages has to do with the proper allocation of time to different pursuits. The second is a piece of advice about using time well.

Because time is obviously essential for learning, and because educators view time as something they can manipulate at least partially, a large body of educational literature has grown up around these two related matters of time allocation and time usage.

Background

Researchers and theorists concerned with educational time factors often begin their comments with a nod in the direction of John B. Carroll, whose landmark 1963 article, "A Model of School Learning," defined degree of learning as *time actually spent in learning divided by time needed for learning*. In Carroll's model, the time needed for a given student to learn a given concept depends upon five factors:

- **Aptitude** - the amount of time an individual needs to learn a given task under optimal instructional conditions
- **Ability** - capacity to understand instruction
- **Perseverance** - the amount of time the individual is willing to engage actively in learning
- **Opportunity to learn** - the time allowed for learning
- **Quality of instruction** - the degree to which instruction is presented so as not to require additional time for mastery beyond that required by the aptitude of the learner

Carroll's work is widely regarded as the beginning of modern inquiry into the effects of time factors in the learning process. Those interested in theoretical models of the time-learning relationship are encouraged to consult Carroll's writings, as well as those of Benjamin Bloom, David Wiley and Annegret Harnischfeger, and Charles W. Fisher and his colleagues involved in the Beginning Teacher Evaluation Study (see the references). The focus of the present review is the array of findings emerging from the research on the effects of various educational time factors on student outcomes.

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School Improvement Program

Definitions

Understanding the research on the effects of time factors requires some familiarity with the different kinds of educational time with which researchers are concerned. These definitions are taken from the work of Anderson (1983), Bloom (1976), and Fisher, et al. (1980).

Allocated time is the amount of time specified for an activity or event. When educators and educational researchers speak of allocated time, they are referring to one of the following elements:

- **School time** - the amount of time spent in school. When used this way, allocated time may refer to the number of school days in a year or the number of hours in a school day.
- **Classroom time** - the amount of time spent in the classrooms within the school (i.e., excluding lunch, recess, time spent changing classes, etc.).
- **Instructional time** - the portion of classroom time spent teaching students particular knowledge, concepts, and skills pertaining to school subjects (i.e., excludes routine procedural matters, transitions, and discipline).

Engaged time, or **time-on-task**, refers to portions of time during which students are paying attention to a learning task and attempting to learn. This excludes time spent socializing, daydreaming, engaging in antisocial behavior, etc.

Academic learning time (ALT) is a term and concept emerging from a large-scale research effort called the Beginning Teacher Evaluation Study (BTES) conducted in the 1970s. ALT refers to that portion of engaged time that students spend working on tasks at an appropriate level of difficulty for them and experiencing high levels of success (excludes time spent engaged in tasks which are too easy or too difficult).

Dead time - refers to periods of classroom time during which there is nothing students are expected to be doing; that is, time which the teacher has failed to manage in any way.

It is important to note that these different measures do not merely refer to different amounts of time or to time spent in different environments. Instead, they represent different ways of conceiving of time and its expenditure. In a recent conversation with the present author, researcher Lorin Anderson addressed these conceptually different notions.

Allocated time, Anderson says, "tells you something about values," that is, the values of a district, school, or teacher are implicit in the relative amounts of time allocated to different activities.

Instructional time "tells you something about classroom organization and management." In other words, the time actually available for and spent in teaching is indicative of the teacher's ability to organize instructional activities and expedite noninstructional ones such as transitions and discipline. Dead time measures also permit inferences about the teacher's organization/management skills.

Time-on-task, meanwhile, "tells you something about teaching," that is, it reveals the teacher's skill in selecting learning activities which engage students' attention and in keeping them focused.

Finally, academic learning time "tells you something about learning," in that it refers to situations in which student and learning material are well-matched and learning is occuring in a fairly ideal fashion.

The Research Base on Educational Time Factors

CHARACTERISTICS OF THE RESEARCH

The findings presented here are based on an analysis of 57 research studies concerned with the relationship between one or more of the educational time factors cited above and the student outcomes of achievement and attitudes. Twenty-nine are primary sources (studies or evaluations) and 28 are secondary source (reviews, syntheses, and meta-analyses).

Student populations participating in the research projects include a wide range of socioeconomic, racial, and ethnic groups and ability levels. Most of the research was conducted in the United States, although German, British, Australian, Canadian, and Israeli studies are also represented in the research base.

Eighteen of the reports are concerned with elementary students, eight with secondary students, and 31 with the entire elementary-secondary range.

Thirty of the documents are concerned with the relationship to student outcomes of allocated time, 38 with the effects of time-on-task, and 11 with the outcomes produced by academic learning time (ALT). Many of the investigations focused on more than one type of educational time.

Many were also concerned with the effects of time factors on more than one outcome area. General achievement was the focus of 35 of the documents. Other outcomes of interest in the reports include reading (11 documents); mathematics (12); student attitudes (6); retention of learning (4); science (2); and spelling, social studies, foreign languages, IQ, dropout rates, motivation, anxiety level, learning rate, and self-concept (1 each).

The research on time factors is closely related to research in two others areas—mastery learning and homework. Both bodies of research are concerned, in part, with the effects produced by increased time allocations for learning and by increased time-on-task.

Full-scale reviews of the homework research and the mastery learning research are outside the scope of this report. However, since these topics can scarcely be ignored in a review of educational time factors, a few recent, major summaries in each area have been included among the references supporting this analysis. The findings from the homework literature are quite consistent; but because there is controversy among researchers about the effects of mastery learning, an attempt has been made to reflect the positions held by different investigators and to limit the focus to the increased time component of mastery programs.

In addition to the 57 key references whose characteristics are outlined above, the "Other References" section of the bibliography contains 28 citations. Articles identified in this section include research on educational time use and the relationship of time to other school variables, models and theories, guidelines for increasing time-on-task, methods for logging different kinds of time use, and other related topics.

Research Findings

EDUCATIONAL TIME USE

The first realization that confronts the student of educational time research is that there are large differences in instructional time allocations across schools and classrooms. Anderson (1980); Karweit (1984, 1985); Hossler, Stage, and Gallagher (1988) and many others have noted that the amount of exposure to instruction in a given curricular area can vary enormously—so that students in one school or classroom may experience three or more times as much mathematics instruction, for example, as those in another setting.

Karweit (1984) and others note that further variation in exposure to instruction is caused by factors such as absenteeism, tardies, classroom disruption, dead time, and closures due to strikes or weather conditions.

Researchers have also made comparisons such as the ratio of school time to instructional time and the ratio of classroom time to time-on-task, and their investigations have produced findings that many find shocking. Honzay (1986-87) and Karweit (1984, 1985) found that only about half the typical school day is actually used for instruction, the remainder of the time being taken up by schoolwide and classroom matters of a noninstructional nature. And according to Anderson (1983); Fredrick, Walberg, and Rasher (1979); and Seifert and Beck (1984), students spend only about half their in-class time actually engaged in learning activities, the rest of the time being expended in classroom procedural matters, transitions, disciplinary matters, dead time, or off-task activities.

These and related findings led the National Commission on Excellence, in their 1983 report, to call for "...more effective use of the existing school day, a longer school day or a lengthened school year" (p. 29).

TIME USE AND STUDENT OUTCOMES - GENERAL FINDINGS

Before discussing potential policy changes regarding time allocations and time use, it is important to examine what educational researchers have determined about the effects of various time factors on achievement and other student outcomes. General findings are cited in this section.

> *There is a small positive relationship between allocated time (however measured) and student achievement.*

A few studies (e.g., Wiley and Harnischfeger 1974; Kidder, O'Reilly, and Keisling 1975) have found a strong positive relationship between quantity of schooling and achievement, and some investigators have found virtually no relationship (e.g., Smith 1979 and some of the studies reviewed by Borg 1980). But most researchers and reviewers have identified a weak, non-statistically significant— but positive—relationship to achievement. This general finding has emerged from the work of Anderson (1980, 1981); Blai (1986); Borg (1980); Brown and Saks (1986); Cotton and Savard (1981); Fisher and Berliner (1985); Fredrick and Walberg (1980); Honzay (1986-87); Karweit (1976, 1985); Leach and Tunnecliffe (1984); Levin and Tsang (1987); Lomax and Cooley (1979); Mazzarella (1984); O'Donnell (1978); Quartarola (1984); and Walberg (1988).

Obviously, if there is no time at all allocated for learning a particular subject, then learning will not take place. But what the above-referenced research indicates is that when students experience greater quantities of allocated time, their achievement is only very slightly better than those experiencing lesser quantities.

> *There is a positive relationship between time-on-task and student achievement; this relationship is stronger than the allocated time-achievement relationship, but is still modest.*

This finding comes from virtually all investigators whose work was consulted for this analysis (Anderson 1975, 1980; Borg 1980; Cotton and Savard 1981; Derevensky, Hart, and Farrell 1983; Fisher and Berliner 1985; Good and Beckerman 1978; Guskey and Gates 1986; Hossler, Stage, and Gallagher 1988; Karweit 1982, 1984, 1985; Leach and Tunnecliffe 1984; Lomax and Cooley 1979; Mazzarella 1984; McGarity and Butts 1984; O'Donnell 1978; Quartarola 1984; Rosenshine 1979; and Sanford and Evertson 1983).

This finding about time-on-task needs to be interpreted with some caution, however. As we shall see, there is reason to believe that the effects of a given amount of time-on-task appear to be different depending upon student characteristics, instructional strategies, and subject matter.

> *There is a strong positive relationship between academic learning time (ALT) and both student achievement and attitudes.*

ALT is a very specific kind of time use; it refers as much to a kind of instruction as it does to time *per se*. And because it is so closely tied to the nature of the learning task, all researchers and reviewers who investigated its effects found it to bear a very close relationship to the achievement and attitudes of students involved in it, i.e., Anderson (1980; Borg (1980); Cotton and Savard (1981); Fisher and Berliner (1985); Karweit (1984); Mazzarella (1984); O'Donnell (1978); Quartarola (1984); Sanford and Evertson (1983); and Walberg (1988).

These same researchers have also identified ways of using time that are negatively related to achievement. These include off-task behavior, dead time, social interactions, disruptions, disciplinary actions, and some forms of seatwork (e.g., in-class silent reading).

KINDS OF TIME-ON-TASK

The finding noted above—that academic learning time (ALT) bears a strong positive relationship to student achievement—indicates that not all forms of time-on-task are equal in their effects. Researchers have devoted a great deal of attention to the *quality*

> *Increasing time-on-task reduces the anxiety and enhances the achievement of highly anxious students.*

TIME FACTORS AND DIFFERENT SUBJECT AREAS

What about the effects of increasing the amounts of time students spend engaged in different curricular areas? The work of researchers such as Block, Efthim, and Burns (1989); Sanford and Evertson (1983); and Stallings (1984), leads to the conclusion that:

> *Increasing time-on-task is more beneficial in the more highly structured subjects, such as mathematics and foreign languages, than in the less structured ones, such as language arts and social studies.*

THE RESEARCH PERSPECTIVE ON INCREASING TIME ALLOCATIONS

Because some educators and legislators would have schools increase time allocations as a means of increasing student achievement, many researchers have examined their own research and that of others to determine the likely effects of such increases. Keeping in mind that the concept of *allocated time* has different meanings, we will look first at what researchers have concluded about the likely effects of increasing the overall quantity of schooling, that is, lengthening the school day, the school year, or both:

> *Significant increases in the quantity of schooling would be required to bring about even modest increases in achievement. The costs associated with extending the school day or year are therefore not justifiable.*

This conclusion is drawn by researchers and reviewers as diverse as Hossler, Stage, and Gallagher (1988); Karweit (1985); Levin and Tsang (1987); Mazzarella (1984); Quartarola (1984); and Slavin (1987). Karweit (1985) writes:

> The inconsistencies of the research results, the often weak effects for time, the concentration of studies on elementary school populations, and the diversity of sources and problems with school time all suggest that blanket increases of time for schooling are at best likely to have an uncertain outcome. The addition of raw numbers of hours obviously does not guarantee that the additional time will be used to any better purpose than the present time is used (p. 14).

What about teachers reallocating time within classrooms so as to increase time allocations for subjects where achievement increases have been deemed important?

> *Increasing time allocations for particular subjects within classrooms can be beneficial to students needing additional help if that time is devoted to the use of effective instructional strategies.*

Dewalt and Rodwell (1988) and some of the mastery learning researchers have found that allocating time for reteaching is effective only if the reteaching involves different materials, examples, and demonstrations than those used during initial instruction. In cases where the reteaching is merely a "rehash" of initial instruction, additional time allocation for reteaching does not increase achievement. In general, the same instructional activities which are associated with greater amounts of time-on-task and higher achievement will need to be utilized during extra time allocations in order for that increased time to be beneficial.

A word of caution seems in order here. While some students do appear to benefit from increased learning time, some researchers warn that requiring students to expend more time on learning activities may have some undesirable consequences for at-risk students. Hossler, Stage, and Gallagher (1988) make the following points:

- High-demand classrooms may cause lower-achieving students to work less hard because they feel lost or left behind.
- Greater time demands (e.g., more homework) may force low-income students to choose between school and employment.
- Increased school or homework time demands may interfere with the participation by at-risk students in extracurricular

> activities—which are sometimes the only bond between these students and their schools. (pp. 2-3)

Closely related to this finding is the discovery made by researchers (e.g., Gettinger 1989; Strother 1984; and Wyne and Stuck 1979) that

> *Achievement benefits result when teachers work with their students in such a way as to reduce the time needed for learning.*

An alternative to increasing the amount of time students spend in learning activities is to decrease the amount of time required for learning. Ways to achieve this which have proven successful in experimental research include providing rewards for passing tests on the first try, and dramatizing or otherwise communicating so much enthusiasm about learning tasks that students apply themselves more fully than they would be likely to do under average learning conditions.

THE RESEARCH PERSPECTIVE ON MAKING BETTER USE OF EXISTING TIME

As just noted, increasing student motivation and therefore reducing time needed to learn is one powerful way of using time well. Various other methods for managing time effectively so as to improve student achievement and attitudes are also offered by researchers. Suggestions for teachers include:

- Begin and end lessons on time.

- Reduce transition time between tasks.

- Closely monitor student learning and behavior, including placing students in desk arrangements that allow teacher and students to see one another well from different points in the classroom.

- Establish and follow simple, consistent rules regarding student behavior in the classroom.

- Make certain that students understand what is expected of them and how to measure its accomplishment.

- Select learning tasks resulting in high levels of success.

- Employ objective feedback about the correctness of responses and assignments and provide suggestions for revision of work products or thought processes.

- Require frequent responses and samples of work, including assigning, collecting, and grading homework regularly.

- Cover content as fully as possible.

- Pay attention to the degree of match between curriculum and testing.

- Reduce noninstructional activities whenever possible.

Recommendations for administrators include:

- Make certain that the amounts of time allocated to various curricular subjects truly reflect the relative values placed on these subjects by school staff and community members.

- Encourage inservice activities to help teachers learn to use time more effectively.

- Encourage parents to teach respect for teachers and for schooling as a means to reducing time-consuming disciplinary actions.

- Establish clear school policies about tardies and absenteeism and make certain these are enforced.

- Keep loudspeaker announcements and other interruptions of class time to a minimum.

"As every thread of gold is valuable, so is every moment of time," noted author John Mason. Following the above suggestions can serve to give this precious element the respect it deserves, and thereby bring about desired improvements in student learning.

Key References

Anderson, L. "Instruction and Time-on-Task: A Review." *Journal of Curriculum Studies* 13 (1981): 289-303.

Reviews a variety of research concerned with time—Learning for Mastery, the Beginning Teacher Evaluation Study, Follow Through evaluations, etc. Major findings: that allocated time bears a small relationship to achievement and engaged time a stronger relationship. Discusses curricular and instructional implications of findings.

____. "Learning Time and Educational Effectiveness." *NASSP Curriculum Report* 10 (1980). (ED 210 780).

Presents research findings on the relationship between instructional time and achievement and discusses approaches—direct instruction and mastery learning—which have been shown to increase time-on-task. Gives examples of school districts which have implemented practices to increase instructional time.

____. "Policy Implications of Research on School Time." *The School Administrator* 40 (1983): 25-28.

Summarizes research on time factors in learning and offers research-based recommendations for policy makers regarding time allocations and use.

____. "Student Involvement in Learning and School Achievement." *California Journal of Educational Research* 26 (1975): 53-62.

Investigates relationships among student characteristics, environmental characteristics, time-on-task, and achievement. Subjects were 30 junior high school mathematics students. Time-on-task was positively related to achievement, and students who had more positive entry characteristics and who studied in a more adaptive learning environment exhibited more time-on-task and higher achievement than other students.

Arlin, M. "Time, Equality, and Mastery Learning." *Review of Educational Research* 54 (1984): 65-86.

Reviews research on mastery learning to assess the validity of the claim made by mastery learning proponents that the gap in learning rates between initially slower and faster learners closes in response to using mastery methods. Found this claim to be unsupported by the mastery learning data.

Blai, B., Jr. "Educational Reform: It's About 'Time'." *The Clearing House* 60 (1986): 38-40.

Summarizes research on the relationship of allocated time and learning outcomes. Concludes, along with most other writers on this subject, that increased time allocations, in and of themselves, are unlikely to produce achievement increases.

Block, J.H.; Efthim, H.E.; and Burns, R.B. "How Well Does Mastery Learning Work?" In *Building Effective Mastery Learning Schools*. New York: Longman, 1989.

Reviews research on mastery learning and discusses directions for future research. The major conclusion is that mastery learning is effective in promoting achievement increases and has produced one of the largest effect sizes of any instructional program.

Borg, W.R. "Time and School Learning." In *Time to Learn*, edited by C. Denham and A. Lieberman. Washington, DC: National Institute of Education, 1980.

Summarizes the work of various researchers on time as a variable in learning. Focuses on findings from the Beginning Teacher Evaluation Study (BTES) on allocated, engaged, and academic learning time.

Brown, B.W., and Saks, D.H. "Measuring the Effects of Instructional Time on Student Learning: Evidence from the Beginning Teacher Evaluation Study." *American Journal of Education* 94 (1986): 480-500.

Proposes a model of learning curves for elementary reading and mathematics using data from the Beginning Teacher Evaluation Study. Reanalysis of these data reveals a positive relationship between allocated time and achievement, though much less for high-ability than for low-ability students. No relationships were noted between type of time use and achievement.

Butler, J.A. *Homework. Close-Up No. 1.* Portland, OR: Northwest Regional Educational Laboratory, 1987.

Cites findings from research studies on the effects of homework on student achievement. Homework bears a positive relationship to learning outcomes for students above the primary grades when it is relevant to learning objectives, appropriate to student ability and maturity levels, assigned regularly in reasonable amounts, well explained and motivational, collected and reviewed during class time, and used as an occasion for giving feedback to students.

Cotton, K., and Savard, W.G. *Time Factors in Learning*. Portland, OR: Northwest Regional Educational Laboratory, 1981. (ED 214 706).

Reviews 35 studies on the relationship between various time factors and student achievement. Found a small positive relationship between allocated time and achievement, a stronger positive relationship between time-on-task and achievement, and a still stronger positive relationship between academic learning time (ALT) and achievement.

Dehham, C., and Lieberman, A. (eds.). *Time to Learn*. Washington, DC: National Institute of Education, 1980.

Offers a compilation of research study reports and other articles relating to the Beginning Teacher Evaluation Study conducted by the Far West Laboratory for Educational Research and Development in 1972-78.

Derevensky, J.L.; Hart, S.; and Farrell, M. "An Examination of Achievement-Related Behavior of High- and Low-Achieving Inner-City Pupils." *Psychology in the Schools* 20 (1983): 328-336.

Reports the results of an observational study of the relative amounts of time-on-task expended by high- and low-achieving inner-city Canadian students in grades 1-6. Both groups spent large amounts of time on-task (75-85%), but high achievers expended more time on appropriate, high-success tasks than low achievers.

Dewalt, M.W., and Rodwell, F.G. "Effects of Increased Learning Time in Remedial Math and Science." *ERS Spectrum* (1988): 33-36.

Investigates the effects of allocating 30 additional minutes of math and science instruction each day for remedial students in grades 5, 6, and 7. No achievement or attitude changes were noted for math students, but science students' achievement and attitudes improved, probably because the additional math lessons were a "rehash" of material presented in students' regular classes, while science instruction was different and varied.

Fisher, C.W., and Berliner, D.C., eds. *Perspectives on Instructional Time*. New York: Longman, 1985.

Presents research findings and their implications regarding time factors in education. Many contributors were involved in the Beginning Teacher Evaluation Study and other major studies of time variables in learning.

____; Berliner, D.C.; Filby, N.N.; Marliave, R.; Cahen, L.S.; and Dishaw, M.M. "Teaching Behaviors, Academic Learning Time, and Student Achievement: An Overview." In *Time to Learn*, edited by C. Denham and A. Lieberman. Washington, D.C.: National Institute of Education, 1980.

Cites findings emerging from the Beginning Teacher Evaluation Study (BTES) conducted between 1972 and 1978 with second and fifth grade teachers and their students. Lists 14 major findings, including a strong positive relationship between academic learning time (ALT) and both student achievement and attitudes.

Fredrick, W.C., and Walberg, H.J. "Learning as a Function of Time." *Journal of Educational Research* 73 (1980): 183-194.

Reviews research on the relationship between different measures of time allocation and learning outcomes. Years of schooling bear a small, positive relationship to knowledge, IQ, cultural openness, religious commitment, and language learning. Days of instruction demonstrate an inconsistent relationship to outcomes. Hours of classes show a moderate but persistent relationship to achievement and other outcomes. Minutes of instruction are modestly and positively related to achievement.

____; Walberg, J.; and Rasher, S.P. "Time, Teacher Comments, and Achievement in Urban High Schools." *Journal of Educational Research* 73 (1979): 63-65.

Reports on a time use study in 175 classes of inner-city juniors and seniors. Researchers found that 46.5 percent of class time was lost to absences, lateness, and inattention. Variables positively associated with reading and mathematics achievement include engaged time (Actual Student Time - AST) and positive teacher comments.

Gettinger, M. "Achievement as a Function of Time Spent in Learning and Time Needed for Learning." *American Educational Research Journal* 21 (1984): 617-628.

Reports the results of a study in which students spent less than adequate amounts of time for successful learning of spelling and reading tasks. Both achievement and retention suffered from insufficient learning time. This study is also reported in Gettinger 1985 below.

____. "Effects of Maximizing Time Spent and Minimizing Time Needed for Learning on Pupil Achievement." *American Educational Research Journal* 26 (1989): 73-91.

Reports the results of an experiment designed to determine the effects on retention when students' time-on-task and time required for task completion were altered through providing incentives. Subjects were 118 third graders. Extra time-on-task improved the retention of lower-aptitude students, but not higher-aptitude ones. Minimizing time requirements improved the retention of both groups.

____. "Time Allocated and Time Spent Relative to Time Needed for Learning as Determinants of Achievement." *Journal of Educational Psychology* 77 (1985): 3-11.

Examines the reading achievement and retention effects produced when fourth and fifth students were allocated less time than they needed for a learning task or when they self-selected less time than they needed for the task. In either case, both achievement and retention were lower than they were when children spent the amount of time they actually needed. These findings are also reported in Gettinger 1984 above.

Good, T.L., and Beckerman, T.M. "Time on Task: A Naturalistic Study in Sixth-Grade Classrooms." *The Elementary School Journal* 78 (1978): 193-201.

Examines the relationship between time-on-task and (1) kind of instructional activity and (2) achievement in six sixth grade classrooms in two schools. High achievers were on task more than low achievers, and students were most on task in the subjects of mathematics and spelling and when working in a small group with the teacher.

Guida, F.V.; Ludlow, L.H.; and Wilson, M. "The Mediating Effect of Time-On-Task on the Academic Anxiety/Achievement Interaction: A Structural Model." *Journal of Research and Development in Education* 19 (1985): 21-26.

Examines the relationship among academic anxiety, time-on-task and achievement. Subjects were 91 seventh graders in two all-black urban elementary schools. High anxiety levels were negatively related to time-on-task and achievement. Researchers conclude that achievement can be raised by increasing the time-on-task expended by anxious students.

Guskey, T.R., and Gates, S.L. "Synthesis of Research on the Effects of Mastery Learning in Elementary and Secondary Classrooms." *Educational Leadership* 43 (1986): 73-80.

Synthesizes the results of 27 studies on group-based mastery learning programs. Findings pertain to many of mastery learning's components, including time use. The effectiveness of mastery programs is attributed, in part, to their efficient use of time.

Helmke, A., and Schrader, F.W. "Successful Student Practice During Seatwork: Efficient Management and Active Supervision Not Enough." *Journal of Educational Research* 82 (1988): 70-75.

Investigates the achievement effects of time spent on seatwork activities which were differently managed by teachers. German fifth graders in 39 mathematics classes participated. The amount of seatwork *per se* had no effect on achievement. The seatwork of higher-achieving students was characterized by careful preparation, efficient management, active supervision, and discreet support and feedback on the part of their teachers.

Holmes, M., and Croll, P. "Time spent on homework and academic achievement." *Educational Research* 31 (1989): 36-45.

Examines relationships among time spent on homework, achievement, and a variety of home and background variables of third-year boys in a British grammar school. A positive relationship was found between time spent on homework and achievement.

Honzay, A. "More is Not Necessarily Better." *Educational Research Quarterly* 11 (1986-87): 2-6.

Summarizes research on the relationship between time allocations and achievement and concludes that lengthening the school day or year is not likely to bring about achievement changes without improvements in classroom instruction and management.

Horn, E.A., and Walberg, H.J. "Achievement and Interest as Functions of Quality and Level of Instruction." *Journal of Educational Research* 77 (1984): 227-232.

Data on 1,480 of the high school students responding to the 1977-78 National Assessment of Educational Progress survey were used to determine correlates of mathematics achievement. Identified were: number of math courses taken, the level of those courses, student interest in mathematics, use of traditional instruction, educational level of parents, quality of the home environment, and minimum exposure to television.

Hossler, C.; Stage, F.; and Gallagher, K. "The Relationship of Increased Instructional Time to Student Achievement." *Policy Bulletin: Consortium on Educational Policy Studies* 1 (1988).

Reviews research on the effects of allocated time (i.e., number and length of school days) and engaged time on student achievement and derives policy implications from findings.

Karweit, N. "A Reanalysis of the Effect of Quantity of Schooling on Achievement." *Sociology of Education* 49 (1976): 236-246.

Replicates analyses carried out by researchers Wiley and Harnischfeger on the effects of quantity of schooling. Data on students in grades 3, 6, 9, and 12 were analyzed. In contract to W and H, this author found only very small, nonsignificant effects.

____. "Should We Lengthen the School Term?" *Educational Researcher* 14 (1985): 9-15.

Reviews studies on the effects of allocated and engaged time and, in light of findings, discusses proposals to increase the length of the school year. Data from studies reviewed do not support such an increase as a means of increasing student achievement.

____. *Time on Task: A Research Review*. Report No. 332. Baltimore, MD: Center for the Social Organization of Schools, The Johns Hopkins University; Washington, DC: National Commission on Excellence in Education, 1982. (ED 228 236).

Reviews research on time use in schools, particularly studies on the effects of time-on-task, including the Beginning Teacher Evaluation Study. Noted inconsistent findings regarding the effects of time variables on achievement, with relatively weak positive achievement effects noted for time-on-task.

____. "Time-on-Task Reconsidered: Synthesis of Research on Time and Learning." *Educational Leadership* 41 (1984): 32-35.

Describes and summarizes research on the effects of time allocations, engaged time, and ALT on student achievement. Offers cautions about attempts to put research findings into practice.

Kidder, S.J.; O'Reilly, R.P.; and Kiesling, H.J. *Quantity and Quality of Instruction: Empirical Investigations*. Paper presented at the Annual Meeting of the American Educational Research Association, March-April 1975. (ED 110 417).

Uses a model developed by Wiley and Harnischfeger to conduct a study on the quantity an quality of schooling with students in grades 4-6. Major findings: allocated exposure time is related to achievement, even when controlling for other factors; extra engaged time benefits low- and middle-ability students, but not high-ability students.

Leach, D.J., and Tunnecliffe, M.R. "The Relative Influence of Time Variables on Primary Mathematics Achievement." *The Australian Journal of Education* 28 (1984): 126-131.

Studies the effects of four variables on the mathematics achievement of 42 Australian fifth and seventh graders. All variables were positively related to achievement. They are, in descending order of effect size, engaged time, IQ, socioeconomic status, and allocated time.

Levin, H.M., and Tsang, M.C. "The Economics of Student Time." *Economics of Education Review* 6 (1987): 357-364.

Cites research studies on the effects of increasing school time (the length of day or year) on achievement, and also applies economic theory to determine the likely effects such increases. Concludes that substantial increases in instructional time would be required to produce even small increases in achievement.

Lomax, R.G., and Cooley, W.W. *The Student Achievement-Instructional Time Relationship*. Pittsburgh, PA: Learning Research and Development Center, University of Pittsburgh, 1979. (ED 179 598).

Reviews findings of ten research studies on the effects of instructional time on achievement. Found a very small positive relationship of allocated time to achievement and a larger but still modest effect of engaged time to achievement.

Mazzarella, J.A. "Longer Day, Longer Year: Will They Make a Difference?" *Principal* 63 (1984): 14-20.

Reviews research on relationships between time factors and learning outcomes and draws conclusions about the likely effects of increasing school time. Cites supportive and opposing spokespersons. Offers guidelines for making maximum use of currently available time.

Mevarech, Z.R. "Time Engagement and Achievement in CAI." *Educational Technology* 26 (1986): 38-40.

Examines the effects of offering children the option of spending extra time on CAI mathematics activities. Subjects were 166 female Israeli second, third, and fourth graders. Those who availed themselves of the extra learning time outperformed those who did not.

McGarity, J.R., Jr., and Butts, D.P. "The Relationship Among Teacher Classroom Management Behavior, Student Engagement, and Student Achievement of Middle and High School Science Students of Varying Aptitude." *Journal of Research in Science Teaching* 21 (1984): 55-61.

Examines relationships of various teacher behaviors to time-on-task and the science achievement of middle school and high school students. Close monitoring, providing feedback, reteaching, maintaining learner involvement in lessons, using instructional time effectively, and managing disruptive behavior efficiently were found to be positively related to achievement.

O'Donnell, H. "Instructional time as related to reading achievement." *The Reading Teacher* 32 (1978): 246-251.

Reviews research reports available through the Educational Resources Information Center (ERIC) system on the relationships between different measures of instructional time and student achievement. Documents cited indicate positive effects on achievement produced by allocated time, engaged time, and academic learning time (ALT).

Paschal, R.A.; Weinstein, T.; and Walberg, H.J. "The Effects of Homework on Learning: A Quantitative Synthesis." *Journal of Educational Research* 78 (1984): 97-104.

Provides the results of a meta-analysis of fifteen studies on the effects of homework on the achievement of elementary and secondary students. Major finding: Assigned homework produced significantly more learning than no homework.

Peterson, P.L., and Fennema, E. "Effective Teaching, Student Engagement in Classroom Activities, and Sex-Related Differences in Learning Mathematics." *American Educational Research Journal* 22 (1985): 309-335.

Examines the relationship between different kinds of time use and the achievement effects on fourth grade boys and girls. Cooperative learning activities were most beneficial to girls, while boys fared better with competitive activities. Time-off-task was negatively related to boys' achievement, while engagement in sanctioned social activities was negatively related to girls' achievement.

———, and Swing, S.R. "Beyond Time on Task: Students' Reports of Their Thought Processes during Classroom Instruction." *The Elementary School Journal* 82 (1982): 481-491.

Examines the relationship between students' thought processes while on task and their achievement and attitudes. Subjects were 72 fifth and sixth graders. Attention to tasks—and particularly a focus on specific cognitive strategies—was positively related to achievement. Self-motivational thoughts were positively related to achievement.

Quartarola, B. *A Research Paper on Time on Task and the Extended School Day/Year and Their Relationship to Improving Student Achievement.* Sacramento, CA: Research, Evaluation, and Accreditation Committee, Association of California School Administrators, 1984. (ED 016 890).

Summarizes research on the relationship to student achievement of allocated time, time-on-task, and academic learning time. Findings are consistent with those of other studies of these topics.

Rosenshine, B.V. "Content, Time, and Direct Instruction." In *Research on Teaching: Concepts, Findings, and Implications*, edited by P.L. Peterson and H.J. Walberg. Berkeley, CA: McCutchan Publishing Corp., 1979.

Reports the results of research on the relationships between each of these three factors and student achievement. Each was found to bear a strong relationship to achievement outcomes.

Sanford, J.P., and Evertson, C.M. "Time Use and Activities in Junior High Classes." *Journal of Educational Research* 76 (1983): 140-147.

Investigates relationships among time use, instructional approaches, achievement, attitude toward teachers, and behavior in junior high English and mathematics classes. Patterns differed for English and math classes.

Seifert, E.H., and Beck, John J., Jr. "Relationships Between Task Time and Learning Gains in Secondary Schools." *Journal of Educational Research* 78 (1984): 5-10.

Cites results of a study of the achievement effects produced by different instructional modes, presence or absence of task relevance and task engagement, and different kinds of task engagement. Sixty first-year algebra student participated. The lecture/discussion method, high task relevance, and on-task behavior (particularly "listening/thinking") were positively related to achievement.

Slavin, R.E. "Mastery Learning Reconsidered." *Review of Educational Research* 57 (1987): 175-213.

Cites the results of a "best-evidence synthesis" of studies of group-based mastery learning programs. Also criticizes the duration and methodology of many studies claiming significant achievement benefits for mastery learning programs. Correcting for these methodological problems, mastery learning programs were not found to produce greater achievement benefits than nonmastery approaches.

Smith, N.M. "Allocation of Time and Achievement in Elementary Social Studies." *Journal of Educational Research* 72 (1979): 231-236.

Investigates the relationship between allocated time and achievement in 68 sixth grade classrooms. No significant relationship was found.

Stallings, J. "Allocated Academic Learning Time Revisited, or Beyond Time on Task. *Educational Researcher* 9 (1980): 11-16.

Reports the results of two studies focused on the relationships among instructional approaches, time factors, and reading achievement. Students in 87 secondary-level remedial classes evidenced greater achievement gains when involved in larger amounts of interactive learning with their teachers. In the second study, students of teachers receiving training in interactive approaches outperformed students of control teachers.

———. *An Evaluation of the Napa County Office of Education's Follow Through Staff Development Effort to Increase Student Learning Time and Achievement.* Washington, DC: National Institute of Education, 1984. (ED 245 303).

Assesses the effectiveness of the Napa County Instructional Skills Staff Development Program. Most participating teachers benefited from the program. Positive relationships were noted between engaged time and achievement in both reading and math. The program improved time-on-task and achievement in math but not in reading.

Strother, D.B. "Another Look at Time on Task." *Phi Delta Kappan* 65 (1984): 714-717.

Summarizes research on time factors in learning and offers suggestions to those seeking to increase student achievement through policies which bear on instructional time.

Tobin, K. "Student Task Involvement and Achievement in Process-Oriented Science Activities." *Science Education* 70 (1986): 61-72.

Reports the results of a study of the relationships between various kinds of on-task behavior and the science achievement of Australian 6th and 7th graders. Among the behaviors of attending, recalling, collecting, comprehending, quantifying, planning, generalizing, non-cognitive on-task behaviors, and off-task behaviors, only planning and collecting were positively related to achievement.

Walberg, H.J. "Synthesis of Research on Time and Learning." *Educational Leadership* 45 (1988): 76-86.

Offers insights on the role played by time in learning processes, and gives cross-cultural examples of educational time use and its effects. Speculates that increases in allocated, engaged, and particularly "productive" time (a concept similar to academic learning time) would be likely to improve learning outcomes.

____, and Tsai, S. "Reading Achievement and Diminishing Returns to Time." *Journal of Educational Psychology* 76 (1984): 442-451.

Uses data from a study involving nearly 3,000 13-year-olds to determine the relationship to reading achievement of 24 variables. One significant finding was that time allocations and frequency of verbal activities are positively related to achievement up to a point, then begin to show diminishing returns.

____; Paschal, R.A.; and Weinstein, T. "Homework's Powerful Effects on Learning." *Educational Leadership* 42 (1984): 76-79.

Reports results of the same synthesis effort detailed in Paschal, Weinstein, and Walberg, 1984 (see above).

Wiley, D.E., and Harnischfeger, A. "Explosion of a Myth: Quantity of Schooling and Exposure to Instruction, Major Educational Vehicles." *Educational Researcher* 3 (1974): 7-12.

Uses experimental data and state school attendance figures to determine relationships between quantity of schooling (length of school day and year, attendance rates, etc.) and achievement. Strong, positive relationships were revealed between these measures and achievement. Offers a model of the relationship between quantity of schooling and student outcomes, and presents policy implications of findings.

Wyne, M.D., and Stuck, G.B. "Time-On-Task and Reading Performance in Underachieving Children." *Journal of Reading Behavior* 11 (1979): 119-128.

Examines the effects on time-on-task and reading achievement of resource room interventions designed to increase student engagement rates through the provision of tangible rewards. Students in grades 2, 3, 5, and 6 participated. Both time-on-task rates and achievement of experimental children increased significantly and improvements were still being maintained at the time observations and data collection ended—four months after the interventions stopped.

Other References

Anderson, L.M. "What Are Students Doing When They Do All That Seatwork." In *Perspectives on Instructional Time* by C.W. Fisher and D.C. Berliner. New York: Longman, 1985.

Draws on classroom research to provide insights into the nature and problems associated with seatwork activities in elementary classrooms—activities which consume an estimated 70 percent of instructional time.

____. *A Measure of Student Involvement in Learning: Time-on-Task*. Columbia, SC: University of South Carolina, no date. (ED 110 504).

Presents and describes methods for measuring student time-on-task and suggests ways these methods can be applied in classrooms.

____. "Time and Timing." In *Perspectives on Instructional Time*, edited by C.W. Fisher and D.C. Berliner. New York: Longman, 1885.

Discusses time factors research, focusing on such topics as time needed to learn, matching instruction to students' characteristics, ideal learning times, pacing, and classroom management.

Ben-Peretz, M. *Time: The Fifth Commonplace in Curricular Deliberations.* Paper presented at the Annual Meeting of the American Educational Research Association, San Francisco, CA, April 1986. (ED 275 599)

Argues that time, along with the learner, the teacher, the milieu, and the subject matter, needs to be given adequate consideration when making curriculum decisions.

Berliner, D.C. "Tempus Educare." In *Research on Teaching: Concepts, Findings, and Implications,* edited by P.L. Peterson and H.J. Walberg. Berkeley, CA: McCutchan Publishing Corp., 1979.

Presents findings from the large-scale Beginning Teacher Evaluation Study regarding time factors. Very large variations were found in the amounts of allocated time, engaged time, and academic learning time (ALT) for different content and subskill areas examined in second and fifth grade classrooms.

Bloom, B.S. *Human Characteristics and School Learning.* New York: McGraw-Hill, 1976.

Presents a research-based theory of the way that learning takes place and discusses the advantages of mastery learning approaches in helping all students achieve at their potential and have positive views of themselves as learners.

____. "Time and Learning." *American Psychologist* 29 (1974): 682-688.

Reviews early research on time factors and learning outcomes and discusses mastery learning as a potential solution to the problems associated with differences in student learning rates and attention levels.

Brandt, R. "On Improving Teacher Effectiveness: A Conversation with David Berliner." *Educational Leadership* 40 (1982): 12-15.

Presents insights from educational psychologist David Berliner, who discusses time allocations, engaged time, match between instruction and school/district goals, classroom management, and classroom climate. Berliner views in-classroom coaching as the best way to improve teaching.

Carroll, J.B. "A Model of School Learning." *Teachers College Record* 64 (1963): 723-733.

Advances a model for learning as a function of time needed and time spent. Suggests directions for future research.

Croll, P., and Moses, D. "Teaching methods and time on task in junior classrooms." *Educational Research* 30 (1988): 90-97.

Investigates the relationship between teaching approaches and student engagement rates in 32 elementary ("junior") classes in the British school system. Found that greater amounts of whole class instruction were associated with higher levels of student time-on-task.

Daniele, V.A., and Aldersley, S.F. "Implications of Time-On-Task Research for Teachers of the Hearing Impaired." *American Annals of the Deaf* 133 (1988): 207-211.

Draws from research on time factors and research on teaching the hearing impaired to make a series of recommendations regarding effective time use with hearing impaired students.

Easton, J.Q.; Muirhead, R.S.; Fredrick, W.C.; and Vanderwicken, S. *Relationship Among Student Time on Task, Orientation of Teachers, and Instructional Grouping in Elementary Reading Classes.* Chicago, IL: Department of Research and Evaluation, Chicago Board of Education, 1979. (ED 169 503).

Investigates grouping factors related to engaged time in 74 inner-city classrooms serving grades 1-6. The major findings was that students were much more on-task during whole class instruction than in small group instruction.

Falk, J.H. "Time and Behavior as Predictors of Learning." *Science Education* 67 (1983): 267-276.

Describes the development and testing of a method for predicting achievement through observation of student behaviors and time-on-task.

Filby, N.N., and Cahen, L.S. "Teacher Accessibility and Student Attention." In *Perspectives on Instructional Time,* edited by C.W. Fisher and D.C. Berliner. New York: Longman, 1985.

Examines some of the data from the Beginning Teacher Evaluation Study to identify which kinds of classroom organization and teaching behavior are related to student engagement rates and achievement.

Fitz-Gibbon, C.T., and Clark, K.S. "Time Variables in Classroom Research: A Study of Eight Urban Secondary School Mathematics Classes." *British Journal of Educational Psychology* 52 (1982): 301-316.

Describes a study of time use in mathematics classes conducted in eight British secondary schools. The relationship to outcomes was not explored, but researchers did determine that only about half the time allocated for mathematics instruction was actually spent in on-task behavior by students.

Karweit, N. "Time Scales, Learning Events, and Productive Instruction." In *Perspectives on Instructional Time*, edited by C.W. Fisher and D.C. Berliner. New York: Longman, 1985.

Discusses various instructional time factors, including duration, timing, and pace. Emphasizes that the ways learning activities are organized is a more important variable than duration of instruction.

Lasley, T.J., and Walker, R. "Time-on-Task: How Teachers Can Use Class Time More Effectively." *NASSP Bulletin* 70 (1986): 59-64.

Offers research-based recommendations to help teachers make better use of class time.

Leinhardt, G. "Instructional Time: A Winged Chariot." In *Perspectives on Instructional Time*, edited by C.W. Fisher and D.C. Berliner. New York: Longman, 1985.

Summarizes the results of three studies on instructional time use and, based on results, offers suggestions for approaches to be taken by future research projects.

National Commission on Excellence in Education. *A Nation at Risk: The Imperative for Educational Reform*. Washington, DC: U.S. Department of Education, 1983.

Reviews the quality and effectiveness of contemporary U.S. education and concludes that American students and graduates have less knowledge and skill than their counterparts in other industrialized nations. Suggests possible avenues for reform.

Ornstein, A.C. "Academic Time Considerations for Curriculum Leaders." *NASSP Bulletin* 73 (1989): 103-111.

Defines different kinds of school-related time concepts, offers comparative information about the different ways time is allocated and used, and presents suggestions for ways to increase the productivity of instructional time use.

Rosenberg, M.S., and Baker, K. "Instructional Time and the Teacher-Educator: Training Pre-Service and Beginning Teachers to Use Instructional Time Effectively." *Teacher Educator* 20 (1985): 12-18.

Draws upon findings from time factors research to make suggestions to teacher educators regarding ways to train teachers to use classroom time more effectively.

Rosenshine, B. "How Time is Spent in Elementary Classrooms." In *Time to Learn*, edited by C. Denham and A. Lieberman. Washington, DC: National Institute of Education, 1980.

Discusses findings from the Beginning Teacher Evaluation Study regarding time allocations and levels of time-on-task among the second and fifth graders participating in that study.

Rossmiller, R.A. "Time-on-Task: A Look at What Erodes Time For Instruction." *NASSP Bulletin* 67 (1983): 45-49.

Discusses research on instructional time use in schools and offers implications for educational practitioners. Findings include: only about 60 percent of the school day is actually available for instruction, girls are on-task more than boys, high-ability students are on-task more than low-ability students, and the average student is on-task 70 to 75 percent of the time.

Smyth, W.J. "A Context for the Study of Time and Instruction." In *Perspectives on Instructional Time*, edited by C.W. Fisher and D.C. Berliner. New York: Longman, 1985.

Reviews the history of teacher effectiveness research and that of time factors research in particular. Presents implications for practitioners of research on instructional time.

Stallings, J.A. "Using Time Effectively: A Self-Analytic Approach." In *Improving Teaching: 1986 ASCD Yearbook*, edited by K.K. Zumwalt. Alexandria, VA: Association for Supervision and Curriculum Development, 1986.

Describes two case studies of time use by junior high school English teachers, and argues that the methods for analyzing time use used in the study can be effectively applied by teachers to analyze their own use of time and make appropriate changes.

Wang, M.C. "An Analysis of Program Design Implications for Teacher and Student Use of School Time." In *Perspectives on Instructional Time*, edited by C.W. Fisher and D.C. Berliner. New York: Longman, 1985.

Describes an instructional approach, the Adaptive Learning Environments Model, based on findings from effective teaching research, and presents results of a study of ALEM's effects on student achievement in a laboratory school setting.

Watkins, P. *Time, Organization and the Administration of Education*. Victoria, Australia: Deakin University, 1986. (ED 283 262).

Offers a review and critique of time as perceived as used in education, and presents four articles related to this theme: "A Model of School Learning" by J.B. Carroll, "About Time for Educational Reform" by H.M. Levin, "Reflections on the History of the Concept of Time" by G.J. Whitrow, and "The Secondary School: Administrative Wonder and Educational Absurdity" by K. Harris.

Wilson, R. "Direct Observation of Academic Learning Time." *Teaching Exceptional Children* 19 (1987): 13-17.

Presents a rationale for tracking academic learning time in classrooms, describes a method for such tracking, and offers ways that the information gathered can be put to use.

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School Improvement Research Series

Effective Practices in Place: Snapshot #13

Teaching Questioning Skills: Franklin Elementary School

Kathleen Cotton

Research Findings

The Northwest Regional Educational Laboratory's 1984 document, *Effective Schooling Practices: A Research Synthesis,* identifies several research findings related to the development of higher-level thinking skills. In schools and classrooms where students' higher-level thinking is encouraged and fostered, many effective schooling principles are in place, especially:

I.2 There are high expectations for student learning.

I.4 Instruction is clear and focused.

- Students have plenty of opportunity for guided and independent practice with new concepts and skills.
- To check understanding, teachers ask clear questions and make sure all students have a chance to respond.

I.5 Learning progress is monitored closely.

In addition, recent research in the area of critical thinking demonstrates that when teachers ask questions calling for such higher mental operations as application, analysis, synthesis, and evaluation, student achievement is enhanced. Finally, research on questioning reveals that teaching students how to respond to and how to frame higher-level questions is positively related to their voluntary participation in these higher cognitive processes in classroom discussions.

Situation

On the northern coast of Washington's Olympic Peninsula, overlooking the Strait of Juan de Fuca, lies the city of Port Angeles. Port Angeles is home to approximately 17,000 people, whose livelihood depends on such local commercial enterprises as shipping, logging, and paper mill operation. Port Angeles is also the site of a Coast Guard base, and the city's proximity to Olympic National Park has created a brisk tourist industry.

The Port Angeles School District serves 4,600 students in one high school, two middle schools, and six elementary schools. Franklin is one of the elementary schools, with a student population of 561 in grades K-5. Reflecting the surrounding community, Franklin students are nearly all white/non-Hispanic, and the socioeconomic levels of Franklin families range from low income to upper middle class.

Context

"Questions—not answers—are the heart of education." These could be the words of Socrates, but were in fact spoken by Franklin teacher, Dennis Duncan. A teacher for more than 30 years, Duncan has always been interested in the role of questions in classroom instruction and has familiarized himself with

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the research on effective classroom questioning strategies. About 20 years ago, he also began working with techniques for teaching students to ask clear, pertinent questions that will enable them to find out what they need to know.

This dimension of Duncan's interest in questioning strategies began when he participated in a series of workshops presented by the Northwest Regional Educational Laboratory in the early days of the Laboratory's operation. The workshop series, titled Inquiry Development, was aimed at training teachers to ask more effective questions and to teach their students questioning strategies and other critical thinking skills.

A summer course called Operation Innovation helped Duncan to refine his strategies and to take the focus off learning *content* in favor of learning *processes*. Within the context of the science laboratory classes he was teaching at that time, Duncan came to realize that if students have well-developed inquiry skills, they will have no difficulty acquiring content knowledge.

"Kids need to be able to state a problem clearly in their minds and then know how to systematically ask the questions that will help them resolve it," Duncan says. He believes that students need to be able to understand syllogisms, construct "if...then" propositions, and to reflect on the data produced by the inquiries they make. "Kids need to be able to formulate theories, and then gather data to refine those theories."

Today Duncan teaches gifted students in grades four and five from all schools in the Port Angeles district and heterogeneous classes of second and third graders. He teaches critical thinking skills, particularly logical reasoning and questioning, with the approach differing depending on the students, the subject matter, and the setting (whole class, small group, or tutorial).

At the time the present writer visited Franklin, Duncan was also teaching remedial mathematics students in grades one through five. In his experience these students often need extra help because numbers and the processing of numbers are not meaningful activities for them. "Kids who have trouble in math generally can't count backwards," says Duncan. A simple exercise like learning to count backwards and then to count backwards in clusters (by sevens, for example), can often "loosen up" a child's ability to process numbers mentally and provide an experience of success. These students also work with manipulatives and are taught to ask the kinds of questions that will help them solve math problems.

Gifted students participate in inquiry classes. A major feature of these classes is the presentation of a situation with some element of mystery to it, e.g., "A boy was playing by himself in an old abandoned house. Later, he was sitting with a paper bag over his head." Students ask Duncan questions that will enable them to get at the who-what-where-when-how-why of the situation and solve the mystery. These questioning games have different rules within which the students must operate, e.g., during some rounds, students may ask only yes-or-no questions. One constant rule, however, is that students may not ask questions which would require Duncan to do their thinking for them. Questions structured such as, "Will you explain why...?" are not permitted. Work with the gifted classes also includes computer programming. Students use the Logowriter program to solve problems put to them by Duncan. Getting the answers they need requires that they use the inquiry skills they have been practicing in other class activities.

Charged with developing a thinking skills class for some of Franklin's second and third graders, Duncan has developed a series of games which comprise the heart of the thinking skills curriculum. These may involve identifying a mystery number or a mystery president, or call for exposing a tricky construct. For example, in the Gramma Game, students may be told that gramma likes apples but not pears, and that she likes puppies but not dogs. Whereas students usually begin by trying to identify conceptual similarities among the things "gramma" likes, persistent application of inquiry skills reveals, in this variant of the game, that gramma likes things with double letters and doesn't like things which lack them. Duncan has packaged some of his Interactive Thinking Skills Games and made these available to teachers in the Port Angeles district and beyond.

Duncan also teaches the New Jersey-based curriculum, Philosophy for Children, which uses stories to stimulate questioning and discussion, with the teacher serving as a facilitator of classroom interactions.

Whether he is working with gifted, average, or remedial students, there are several elements that Duncan brings to his teaching, and these reflect his overall goal of "sending students out into the world so that they can learn forever."

He is respectful of students and holds high expectations for them. These he communicates by offering them challenging but attainable tasks and letting students know he believes in their ability to succeed at them. He communicates warmth through words, tone, and gestures, such as a supportive hand on the shoulder. He creates a responsive environment in which questioning by students is not merely acceptable; it is encouraged and actively taught. Duncan also uses cooperative learning groups for some activities, so that students learn to function as team members and practice their inquiry skills with one another. These practices are congruent with research findings regarding effective classroom instruction and were readily observed in the classes visited.

What about the cognitive and affective results produced by Duncan's approach? Data from the gifted and the third grade thinking skills classes are mostly anecdotal: students claim the strategies Duncan teaches them are useful in their other classes, and they like the thinking skills games. In fact, Duncan's reduced availability to some of his students (now that he has been given additional program development tasks) is viewed with disfavor by virtually all affected students. Parents like and support the inquiry classes and enjoy their own participation in the thinking skills games during parents' nights at Franklin. Teachers whose students work with Duncan report increases in those students' analytical skills—increases which they believe are enhancing overall achievement. Finally, former students frequently contact Duncan, thanking him for his role in teaching them how to think.

Identifying changes in the achievement of remedial mathematics students is a more straightforward matter, and Duncan's tutoring program has been credited for improvements in student achievement. On the average, his students have demonstrated a ten percent gain per year on the mathematics subtest of the Comprehensive Test of Basic Skills (CTBS). Duncan is quick to point out, as have countless others, that remediation is most effective with younger children. In 1987-88 his fifth graders gained only five percent on the CTBS, while his second graders' scores increased by 26 percent.

Practice: Inquiry Skill Development in a Second Grade Classroom

Duncan entered a second grade classroom and the regular teachers turned the class over to him. He told the students that their task would be to identify the number he had in mind from a chart which he taped to the chalkboard. This is the chart:

1	7	2	6	3	+	-	1,820
2	669	10,000	666	1,357	33,420	44	x
3	11,111	55	124	12	40	140	1,11
4	2	180	33	4,570	160	10	980
5	333	9	888	3,170	5	15	1
6	1,234	3,339	33	91	10,120	2,170	900
	A	B	C	D	E	F	G

The numbers and symbols were written in four different colors. The numbers and letters which appear outside the chart were written on the chalkboard to identify the vertical and horizontal rows. Duncan began by telling the students they could ask yes-or-no questions, one question per turn.

The children were obviously familiar with this kind of game and immediately began waving their hands to be called on. "Is it even?" one student asked. "Is it a number (as opposed to a symbol)?" asked another. "Does it have more than three digits?" "Is it black?" "Is it in a row marked with a vowel?"

Throughout the exchange, Duncan worked with students to summarize what they had learned so far: "We know that the number is this, this, and this, so what have we eliminated?" He also stimulated students to ask more incisive questions: "Can you think of a question that will eliminate more than one row?" At no time did Duncan rush students while they were trying—sometimes struggling—to formulate their questions. In addition, Duncan spoke to the students by name and behaved in a warm and friendly manner toward them. There was a high level of participation and enthusiasm in this and the other classes observed.

Students in this game were at liberty to attempt to identify the mystery number at any point, keeping in mind that they would be eliminated from the game if mistaken. When a student attempted to identify the number, Duncan asked him or her for a line of reasoning: "What three things make you think it's that number?" If a student was incorrect in an attempt to identify the number, Duncan went over the student's line of reasoning with him/her and with the class to determine where the problem lay.

Duncan and the students played three more rounds in this class, with progressively more restrictive rules: no color questions, no number-of-digit questions, etc. In the final round, the student who had identified the previous mystery number chose a new mystery number, and Duncan helped to facilitate the question-and-answer exchange of this student and her classmates.

Practice: Inquiry Skill Development in a Third Grade Classroom

A similar number chart was used for a game with a class of third graders, but the game structure was more complex. Students could each ask two yes-or-no questions and receive two answers, but Duncan did not tell them which answer went with which question. This produced an array of summaries such as, "We know it's either blue or in the third row (neither blue nor in the third row, both blue and in the third row)." When a student formulated a question based on his/her memory of previous answers, Duncan asked a question such as, "Why did you put it that way instead of this way (asking a related question)?" This gave the student an opportunity to describe the process of elimination represented by the questions which had been asked up to that point. Other variations of the game followed this one. One game was limited to 15 "no" answers—a rule which motivated students to ask well thought-out questions that would eliminate the maximum number of alternatives. In another game, students were allowed brief conferences so as to draw upon one another's recall of facts revealed up to that point in the game.

In this class as in the second grade class, Duncan acknowledged incisive, creative approaches, saying such things as "Good question!" and "Very good strategy!"

Practice: Inquiry Development with Fourth and Fifth Grade Gifted Students

In the afternoon Franklin's gifted students in grades four and five assembled to discuss the inquiry problem of the day. As students were arriving, Duncan engaged in a friendly exchange with them about local sports events and other local matters. These amenities appeared pleasant and were also in keeping with Duncan's conviction that "kids need to be relaxed to pursue higher-order thinking."

The inquiry problem of the day was the one cited earlier in this report: "A boy was playing by himself in an old abandoned house. Later he was sitting with a paper bag over his head. What do you suppose is going on?" A lengthy and detailed question-and-answer session followed, with reminders about the structure and rules of the inquiry game: "My role is to give you information, not to do your thinking for you."

Student questions were often clever and probing, framed in such a way as to offer hypotheses and elicit data which would help them refine those hypotheses. Some examples:

> "If I asked the boy if he was embarrassed to have a paper bag on his head, what would he say?"
>
> "Who put the paper bag on his head?"

> "If I were to ask his mother if she disliked the boy's haircut, what would she say?"
>
> "If he took the paper bag off his head, would his mother make him put it back on? Would she say harsh words to him?"
>
> "Were there eye-holes in the paper bag."

At one point, when the inquiry had veered off in an unfruitful direction, Duncan had the students close their eyes and "get a mental picture" of the situation as revealed by their questions. In addition, he was very adept at extracting conclusions from students regarding what they had learned thus far, e.g.:

Student:	"Were there spiders in the old house where the boy was playing?"
Duncan:	"I don't know."
Student:	"Would things have been the same whether or not there were spiders in the house?"
Duncan:	"Probably. Therefore...?"
Student:	"Therefore spiders don't have anything to do with it."

At another point in the inquiry, a student became confused and flustered while attempting to frame a question and abandoned his attempt, saying, "Oh, never mind." Duncan responded, saying, "But I want to mind. I want to know what you're thinking," and guided the boy through the process of asking a useful question.

"Questioning sets up tension which is not resolved until all pertinent answers are uncovered," said Duncan earlier in the day, drawing from the work of a theoretician whose work he admires. This tension—a healthy, curious tension—was evident in the enthusiastic pursuit of answers by the students in this inquiry class.

Upon resolving the mystery, Duncan had the students review their inquiry process. They went back over the details: "First we found out______, then we found out______, then somebody asked about the boy's mother and we found out________," and so on through the process of piecing together the boy's story. The students then proceeded to the school library to pursue their computer projects.

Readers who wish to know more about Duncan's inquiry development classes—or who can't stand not knowing why the boy had a paper bag on his head—are encouraged to contact Dennis Duncan, who may now be reached at Port Angeles High School, Room 982, 304 E. Park, Port Angeles, Washington 98362 (206) 452-7602.

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School Improvement Research Series

Effective Practices in Place: Snapshot #14

Improving Student Attitude and Behavior: Loma Linda Elementary School Northeast Junior High School

Kathleen Cotton

Research Findings

Research in the affective realm points to several areas of educational practice which can enhance student attitudes and improve school discipline. As outlined in *Effective Schooling Practices: A Research Synthesis* (Northwest Regional Educational Laboratory, 1984), these include:

At the **classroom** level:

1.10 *Standards for classroom behavior are explicit.*

- Teachers let students know that there are high standards for behavior in the classroom.
- Consistent, equitable discipline is applied for all students.

1.11 *Personal interactions between teachers and students are positive.*

- Teachers pay attention to student interests, problems and accomplishments in social interactions both in and out of the classroom.
- Teachers make sure they let students know they really care.

1.12 *Incentives and rewards for students are used to promote excellence.*

- All students know about the rewards and what they need to do to get them. Rewards are chosen because they appeal to students.
- Rewards are related to specific student achievements. Some rewards may be presented publicly; some should be immediately presented, while others delayed to teach persistence.

At the **school** level:

2.7 *Discipline is firm and consistent.*

2.9 *Incentives and rewards are used to build strong motivation.*

The St. Vrain Valley School District

The St. Vrain Valley School District is located in Northern Colorado on the eastern slope of the Rocky Mountains. The center of the district is the city of Longmont, which is located about 40 miles north of Denver and has a population of over 50,000. Some 14,000 students attend St. Vrain's 18 elementary and 12 secondary schools.

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Approximately 85 percent of St. Vrain's students are white/non-Hispanic, 12 percent are Hispanic, and 3 percent represent other minority groups, chiefly Asian cultures. Many migrant students attend school in the St. Vrain district.

The Longmont area encompasses a large socioeconomic range, from upper middle class families to inhabitants of the city's housing projects.

Loma Linda Elementary School

Situation

Approximately 350 students in grades K-3 attend Loma Linda Elementary School. The student population is nearly 90 percent white/non-Hispanic and 10 percent Hispanic, with small numbers of students from other racial/ethnic backgrounds. Socioeconomically, Loma Linda families are lower to middle class, and most parents have a high school education or less. Twenty percent of Loma Linda's students receive free or reduced-priced lunches.

Context

Loma Linda is a participant in the Onward to Excellence (OTE) school improvement process, a process in which school leadership teams compile profiles of school performance, and school staff select improvement goals based on the profiles. Staff then review research, develop prescriptions and plans to achieve identified goals, implement those plans, monitor operations, and periodically review and renew their school improvement efforts.

Loma Linda staff began using the OTE process three years ago. Large numbers of referrals of students to the principal's office and distressingly high levels of classroom disruption led the staff to identify improvement of student discipline as the school's priority goal.

In frequent communication and collaboration with the entire Loma Linda staff, the OTE leadership team worked to identify the specific discipline problems confronting the school, and determining approaches which would help to meet identified needs.

A review of various potential practices led staff to focus their attention on the prosocial skills training program called Skillstreaming. Originally developed for use with special education students, the Skillstreaming program proceeds from the belief that behavioral problems are the result of skill deficits. Remediation of behavioral problems, therefore, calls for training in prosocial skills—skills in self-management and in getting along with others. The current Loma Linda program is an adaptation and expansion of the Skillstreaming ideas and materials as presented in the book, *Skillstreaming the Elementary School: A Guide for Teaching Prosocial Skills* by Ellen McGinnis and Arnold P. Goldstein, Research Press Co., Champaign, IL, 1984.

Practice: Prosocial Skills Training at the Elementary Level

Each of the school's priority skill areas (e.g., classroom skills, friendship skills, etc.) becomes the schoolwide focus for a month at a time during the school year. Prosocial skills training is provided in that goal area during that month.

Various staff members volunteer to lead the different monthly efforts and are at liberty to choose whatever means they prefer to teach the skills schoolwide and in classrooms. They might offer role playing demonstrations, lead art projects (e.g., featuring posters which display the skill), or bring in speakers to address the targeted area. Examples of monthly goal areas include honesty, "joining-in" skills, classroom skills (listening, question asking, getting clarification), and being a friend (what does it mean and what do you do?).

The program emphasizes self-monitoring and internal checking rather than placing adults in the role of monitoring students' behavior. Appropriate behaviors are broken down into small, teachable units and presented in sequence, so that students can progressively build upon what they have already learned.

Reinforcing students in the use of prosocial skills is an important part of Loma Linda's program. Staff members (including classified staff) give out buttons to students they observe practicing the skill of the month. Since each staff member may give out only three buttons each month, staff must be judicious in their selection of students and situations which merit awarding the buttons; and receiving a button is something students truly value. An all-school assembly at the end of every month provides an occasion for giving certificates to students who have demonstrated improvement in the skill of current interest.

Parents support the program in various ways, including giving their input about the program at school gatherings and reviewing the goal of the month with their children at home. The parent involvement component of the program is currently expanding, with parents taking on task assignments based on their skills and preferences as determined by a school-administered survey. For example, parents are involved in such activities as computer data analysis, putting on a lecture series, and planning for a parent-sponsored barbecue.

What has changed as a result of implementing the prosocial skills program? Disciplinary referrals to the principal's office have reduced dramatically. The year before the program began, 77 first graders were referred to the principal's office for disciplinary action; in 1988-89 three first graders were referred. Teachers report spending far less class time dealing with disruptions, and they assert that the program has enabled staff and students to have a common baseline of understanding and "speak the same language" with regard to social skills. Students and parents like and support the program. And although it is difficult to establish a causal relationship between the program and student achievement, staff believe that the SAT score improvements of Loma Linda students are attributable, in part, to the increases in learning time which have resulted from use of the program.

In addition to its other functions, Loma Linda is the site for the district's high-intensity program for trainable mentally retarded students, and efforts are made to mainstream as many students as possible. The school's prosocial skills training program has been modified to meet the needs of this special population, and staff and parents are pleased with the way the training has facilitated successful mainstreaming of these students. Special education teacher, Margaret Wilson, observes, "One of the things I like about the program is that it can be used with almost any level of kid I also like it that the program is not punishment oriented; it focuses on identifying positive elements in kids' behavior. And it makes the [special education] kids feel more a part of the school."

Loma Linda principal, Noelle Branch is very enthused about the role of the prosocial skills training program in meeting students' affective needs. "We have to give kids tools for interacting with others successfully and opportunities to use those tools," she says. "I love this program, because it does that."

For more information about Loma Linda's program, contact Noelle Branch, Principal, Loma Linda Elementary School, 333 East Mountain View, Longmont, Colorado 80501, (303) 776-9108.

Northeast Junior High School

Situation

Northeast Junior High School serves 675 students in grades 10-12. Approximately 90 percent of Northeast's students are white/non-Hispanic, and most of the remaining 10 percent are Hispanic. Most families in the Northeast attendance area are at lower or middle income levels.

Context

An OTE school since 1985, Northeast has as its goal the improvement of student attitude. This goal was chosen because of a schoolwide concern about the high incidence of behavior problems, tardies, and absences among Northeast students.

Northeast's principal Bob Foster and OTE leadership team members worked with all staff, as well as parents and community members, to plan a program which could bring about improvements in student attitude. Six focal areas—drawn from the practice clusters in the NWREL document, *Effective Schooling Practices: A Research Synthesis*—were identified. These include: (1) quality teaching, (2) good classroom management, (3) positive personal interactions between teachers and students, (4) incentives and rewards to promote excellence, (5) firm and consistent discipline, and (6) parent involvement.

Practice: Improving Student Attitude in a Junior High School Setting

As in the Loma Linda program, various Northeast staff volunteer to coordinate activities in each of the focal areas and to offer workshops and presentations for their fellow staff members. Approaches have included forming a team to develop a discipline code, bringing in a speaker to discuss ways to promote parent involvement, and reviewing and sharing research findings on the topic of classroom management. In addition to staff development activities on priority topics, efforts are also made to keep students and parents aware of the school's improvement goals and things they can do to help achieve them. Prosocial skills concepts, problem-solving steps, and other positive messages are displayed in classrooms, and some teachers have undertaken systematic prosocial skills training activities with their students.

Northeast staff are also involved in operating a substance abuse prevention program and in working intensively with at-risk students to help them achieve success. Staff continually work to coordinate these efforts with OTE activities, and these components together are viewed as responsible for bringing about positive changes in the attitudes and behavior of Northeast students.

One obvious indication that Northeast's program is working is that scores on student attitude measures are considerably higher than they were prior to program implementation. In addition, Northeast has experienced notable reductions in behavior problems, tardies, and absences. Staff assert that school hallways and grounds are cleaner; there are fewer fights and less use of profanity; and student involvement in sports, music, and student government has increased since the program was implemented. There is a smaller core group of students who are repeatedly referred for disciplinary action, and increases have occurred in the numbers of minority students receiving awards for their involvement in extracurricular activities. One of Northwest's assistant principals, Tom Bachenberg, remarks that, although improvement of *staff* attitudes was not identified as an original program goal, such improvement has in fact occurred and is another factor in Northeast's enhanced school climate.

Another assistant principal, Barbara Levin, summarized these improvements by saying, "Now Northeast feels more like a regular junior high school than a high-risk junior high."

An interesting footnote to the list of positive outcomes noted at Northeast is an observation made by the school's next-door neighbor, Loma Linda principal Noelle Branch. Branch asserts that, whereas groups of Northeast students used to come over to the Loma Linda grounds, engage in fights, and litter the area, such problems have virtually disappeared. "They must be doing something right," she says.

More information about the program is available from Bob Foster, Principal, Northeast Junior High School, 233 East Mountain View, Longmont, Colorado 80501, (303) 772-7900.

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School Improvement Research Series

Effective Practices in Place: Snapshot #15

Teaching and Assessing Writing Skills: Lacomb Elementary School

Kathleen Cotton

Research Findings

In a school where students like to write and assessments show that their writing is improving, it is likely that many validated effective schooling practices are in place. The document, *Effective Schooling Practices: A Research Synthesis* (Northwest Regional Educational Laboratory, 1984), cites several effective practices characteristically found in connection with effective schoolwide writing programs. Major elements are listed below.

At the **classroom** level:

1.1 *Instruction is guided by a preplanned curriculum.*

1.2 *There are high expectations for student learning.*

1.5 *Learning progress is monitored closely.*

1.12 *Incentive and rewards for students are used to promote excellence*

At the **school** level:

2.1 *Everyone emphasizes the importance of learning.*

2.2 *Strong leadership guides the instructional program.*

2.3 *The curriculum is based on clear goals and objectives.*

2.6 *Learning progress is monitored closely.*

2.8 *There are high expectations for quality instruction.*

2.9 *Incentives and rewards are used to build strong motivation.*

2.11 *Teachers and administrators coninually strive to improve instructional effectiveness.*

Situation

In the rural countryside approximately 40 miles southeast of Salem, Oregon is Lacomb Elementary School, the only school in the Lacomb School District. Lacomb's 274 students span kindergarten through eighth grade.

Over 99 percent white/non-Hispanic, the Lacomb student population comes mostly from middle class or lower middle class homes. The majority of community members work in timber-related industries or in metals industries in nearby Albany. There are also many dairy and tree farms in the area.

Eighteen percent of the Lacomb student body are eligible for special education services. There is a 20 percent annual transiency rate in the Lacomb district, and 27 percent of Lacomb's students receive free or reduced luches.

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School Improvement Program

Context

Since the fall of 1987, Lacomb has been involved in the Onward to Excellence (OTE) school improvement process. Developed and disseminated by NWREL, OTE involves schoolwide participation in a series of improvement activities, as guided by a school leadership team.

In the OTE process, staff members use profiles of student performance to determine the schoolwide goal(s) they wish to pursue and then develop a research-based prescription and implementation plan to reach the goal(s). As the plan is implemented, staff monitor improvement activites, make adjustments as needed, and evaluate progress at the end of each OTE cycle.

Compilation and review of their school profile during the 1987-88 school year led Lacomb staff members to select the improvement of student performance in writing as their schoolwide goal. At this same time, Lacomb also applied for and received a grant through the provisions of a state School Improvement and Professional Development program established by Oregon House Bill 2020. Written to support the school's planned OTE work, the 2020 grant has enabled Lacomb staff to pursue their writing improvement goal more intensively than would have been possible without these additional resources. Specifically, the 2020 funding has helped to support the development of the schoolwide writing curriculum, the development of a writing assessment instrument, and an array of professional development activities related to the writing process.

The implementation plan was drafted by June 1988 and refined when OTE leadership team members met during the following summer. In the fall of 1988 professional development activities began with four-hour credit classes in writing as a process and writing across the curriculum.* Staff also made use of consultant assistance to insure that the writing portion of Lacomb's language arts curriculum was congruent with research on effective practices. Lacomb engaged the services of another consultant to help staff develop skills in assessing student writing. They received training in a holistic scoring process, using student writing samples from fall 1988 to practice their skills and to amass baseline data on student writing performance in grades two through eight.

Throughout the year staff members also engaged in an array of individual professional development activities, including participation in the four-week Oregon Writing Project and workshops on topics such as cooperative learning in writing, whole language teaching and learning, publishing techniques, and writing assessment.

Staff development in support of the school's writing improvement goal also extended to noncertified staff. Funds made available through a local school-business partnership called Action Alliance for Excellence in Education (A2E2) enabled classified staff to receive training in several areas, including a three-hour writing-as-a-process workshop for educational assistants.

In addition to regular classroom writing activities, Lacomb staff and students have also engaged in a variety of other functions in support of the school's writing improvement program. In April 1989 a Young Authors' Fair featured an array of "stations" at which staff, parents, and community members could observe students illustrating and publishing "books," listen to them reading and telling stories, talk with a visiting author, and engage in some of the same kinds of writing activities that students pursue in their classrooms. Through the 2020 grant, Lacomb also played host to an Artist in Residence for a week and held several writing-related assemblies featuring guests who shared stories and poems and demonstrated maskmaking, bookbinding, and other skills.

Principal Eldon Wortman and the school leadership team have been careful to build incentives and rewards into the project. At an end-of-the-year banquet, staff members who had made major contributions to the writing project were recognized and given awards. In addition, the names of those staff members who serve on each year's school improvement leadership team have their names engraved on a publicly displayed plaque to recognize their efforts.

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* *Writing as a process* is an approach to teaching writing skills which is process oriented rather than product oriented. Attention is given to the various stages of the writing process, including prewriting activities, drafting, revising, editing, and publication. *Writing across the curriculum* focuses on ways that writing skills can be integrated into activities in all school subject areas.

Assessment continues to be an essential feature of Lacomb's writing improvement project. A writing sample taken in the fall of 1989 was compared to a sample taken the previous spring. Using an eight-point holistic scoring instrument, staff determined that over two-thirds of Lacomb's students (68 percent) scored higher by one or more points in the spring than they did in the fall, 17 percent maintained the same scores, and 15 percent evidenced a drop in scores. In addition to these formal data, staff also point to improvements in student behavior and increases in staff collegiality since the project was launched.

Lacomb staff are understandably proud of the improvements that have taken place in their school and speak animatedly of plans for the future. Having been awarded another 2020 grant for 1989-91, staff will be working on refining the writing curriculum and assessment techniques and on extending the project's staff development component.

Efforts to expand the parent/community involvement aspect of the project are also in process. In the summer of 1989 a large group of parents and community members joined with staff and school board members to develop statements of mission and guiding beliefs. Other efforts to increase the involvement of community people, e.g., through having them serve as the readership for students' written products, are underway as well.

As called for by the OTE process, Lacomb staff will be reviewing their teaching and assessment practices during 1989-90 and developing a new prescription. Additional training in writing as a process will be provided to staff. In the assessment component, staff will be utilizing more focused holistic scoring, with the intent of moving toward the use of analytical assessment techniques, which involve applying more exacting criteria to students' writing samples.

"It's exciting to have such strong focus to our efforts," says principal Eldon Wortman. "It's gratifying to see everyone working toward the same goal and then to see such positive results, including the spinoffs, such as behavioral improvements in classrooms."

Nancy Sommers, Lacomb counselor/administrative intern, outgoing leadership team chairperson and author of both 2020 grants and the A2E2 grant, speaks of the effects of the writing project on students. "The children in this school have learned to really like writing, and they get upset if writing time gets pre-empted." Sommers also says, "We on the staff are in the process of a paradigm change. We've moved away from the old method of teaching spelling, then grammar, then writing—to teaching writing as a process. In the future I feel that we'll be utilizing more of a whole language approach."

Practice: Teaching Writing as a Process

Grade 3

As in all the Lacomb classrooms observed, the walls of Kary King's third grade classroom displayed student written and artistic products, colorful posters, classroom rules, and seasonal decorations. Ms. King asked the students to share with the observer what they were currently working on in writing. "Interviews!" they chimed. Upon being called on, one girl said, "We're going to go to the staff members and ask them about their lives." "Why do we do interviews?" asked Ms. King, and the boy she called on answered, "To get personal background to write about, like where you live or used to live and what school you went to." "What do we do after the interviews?" Ms. King asked. Students described how they will write stories about Lacomb staff members based on what those staff members tell them in the interviews. "Using complete sentences," added one student. They then described the difference between biography and autobiography.

Ms. King's students engage in 40 minutes of writing each day. Topics are usually student selected. Ms. King holds conferences with the students as they are working on their stories and, in keeping with the writing-as-a-process approach, places very little emphasis on spelling and grammar until the story content is developed. She has the students participate in prewriting conferences with one another, although she notes that this is difficult with young children, because they get off task easily.

Grade 2

Vicki Van Noy is a second grade teacher and one of the cadre of on-site experts in Lacomb's writing improvement project. She is the OTE leadership team chairperson in 1989-90.

Ms. Van Noy's students were drafting stories on subjects of their choice. The observer approached students individually, asking them what they were working on, whether they like writing, where they get their ideas, and related questions. Some responses: "I get my words out of my tutor's book to write my story (a handmade booklet of words the student's tutor helped him compile). Then I go up and talk about it with Ms. Van Noy." "I'm writing a Garfield story; then I'll publish it and make it into a book." "It's easy [to get ideas]. You just think of them. Usually you just write about what you know."

Asked if the students always publish the stories they write, a boy answered, "Not always; sometimes you save them in your folder and keep them for ideas for another time when you're writing."

Throughout these exchanges, the students were very animated, often acting out events in their stories as they were telling them. Several students read stories they had written, often commenting on the illustrations they had included with their texts.

Grade 4

Prewriting conferences were underway during the observer's visit to Sandy Van Speybrock's fourth grade classroom. Ms. Van Speybrock closely monitored students' work during this inherently noisy activity, keeping them on task.

"What's conferencing? Is it helpful? What do you do after the conference." Asked these questions by the observer, the fourth graders gave an array of responses indicating familiarity with this activity and skill in making use of it. For example, "You tell each other what you want to write about and help each other with ideas." "It helps you to know more things to write about." "Then you revise your story with your partner and then with your teacher and make it into a book or a scroll. I'm writing about a pair of fuzzy underwear." "When your partner gives you ideas, you can put them down and think about it, but you don't have to put [their ideas] in if you don't want to. But usually it helps."

This writing period ended with students reading their stories aloud to the whole class.

Grades 7 and 8

In Tadd Gestrin's combined seventh and eighth grade class, students were engaged in writing and holding content conferences with one another. During the observation time, students responded to questions about their essay topics, which activities in the writing process they found helpful, and whether they thought writing skills would be useful to them later in life. Some responses: "Conferencing's good; he'll tell me whether it sounds good or what needs to be fixed." "Sometimes you just get blocked and you can't think of anything. Then conferencing or brainstorming can help."

Although a couple of students indicated that they saw no need for writing skills in their adult lives, most seemed to feel the skills they were building in school would be useful to them in the future.

Toward the end of the writing period Mr. Gestrin called the students to the corner of the room, where they sat on the carpet for a sharing session. Students took turns explaining what their written work is about, read it aloud, and received input from other students.

Principal Eldon Wortman, counselor/administrative intern Nancy Sommers, and teacher Vicki Van Noy welcome inquiries from interested persons about Lacomb's writing program. They may be contacted at Lacomb Elementary School, 34110 E. Lacomb Drive, Lebanon, OR 97355, (503) 258-6489.

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School Improvement Research Series

Effective Practices in Place: Snapshot #16

Staff Development to Improve Student Writing Performance: East Orient Elementary School

Jocelyn A. Butler

Research Findings

East Orient Elementary School's work to improve student writing performance is guided by findings from the effective schooling research. The Northwest Regional Educational Laboratory publication, *Effective Schooling Practices: A Research Synthesis*, describes those findings as follows.

Relevant research-based practices at the **classroom** level include:

1.1 *Instruction is guided by a preplanned curriculum.*

- Learning goals and objectives are developed and prioritized.
- Instructional resources and teaching activities are identified, matched to objectives and student developmental levels and recorded in lesson plans. Alternative resources and activities are identified, especially for priority objectives.
- Resources and teaching activities are reviewed for content and appropriateness and are modified according to experience to increase their effectiveness in helping students learn.

1.2 *There are high expectations for student learning.*

- Teachers set high standards for learning and let students know they are all expected to meet them. Standards are set so they are both challenging and attainable.

Supportive **school** level research-based practices include:

2.3 *The curriculum is based on clear goals and objectives.*

- Learning goals and objectives are clearly defined and displayed; teachers actively use building curriculum resources for instructional planning. District curriculum resources are used, when available.

Situation

Part of the two-school Orient School District in Gresham, a suburb of Portland, Oregon, East Orient Elementary School is located in a community that includes extensive agriculture and a number of landed suburbanites who commute to the nearby city. A major feature of the Orient community is the presence of the most nursery stock in a single concentrated area in the United States.

The school staff of 21 certified teachers serves a student population of 386 in grades 4-8, with one teacher for every 18 students. Classes for all five grades take place in the same building.

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School Improvement Program

There is a small, growing population of ethnic minority students, many of whom have no experience in school and who arrive unable to speak English.

Grades 4, 5 and 6 are organized as self-contained classrooms with a single teacher and opportunities for work with district specialists in specific areas (music, etc.). Students in grades 7 and 8, on the other hand, have a school day divided into eight periods with eight different teachers in a junior high school configuration. In the junior high classes, first period is a few minutes longer each day for attendance, lunch count and announcements.

Context

East Orient Elementary School has been focused on improving student performance since the school began applying the research-based school improvement process *Onward to Excellence* (OTE) in 1984. Using the process, the school collected data on student performance, used the data to select schoolwide goals to improve that performance, and adopted instructional practices tied to the goals.

Their first OTE goal concentrated on improving student reading scores, and from 1986 to 1989 student reading performance showed steady, significant improvements. Much of the effort for reaching this goal revolved around staff involvement in decision making and in professional development work to change instructional practice.

Following success in improving student reading performance, the school then turned to writing, adopting an OTE goal to improve student writing performance as measured by analytical writing assessments administered at the time, at various grade levels, by the state, the county and the district. Work began on a writing goal in 1987.

Also in 1987, East Orient successfully applied for a grant from the Oregon Department of Education's "School Improvement and Professional Development" program funded through House Bill 2020 by the Oregon Legislature. In the application, the school built on work in the area of student writing performance, citing improved student writing skills as a main goal. East Orient received a grant of $21,000 — $1,000 for each full-time certified staff member — to be used for professional development opportunities for staff that would contribute to their meeting stated goals.

With experience in moving toward improvement goals and funding for staff training, East Orient began to focus on four goals:

- **Improving student writing performance:** "By spring of 1989, 75 percent of the students at each grade level tested will achieve a mean performance equal to or greater than 3.6 on a scale of 1 to 5 in all six areas as measured by county and district analytical writing assessments."
- **Completing staff development programs to implement an integrated approach to writing:** "By spring of 1989, 100 percent of the language arts staff will demonstrate an integrated approach to writing instruction. A variety of new strategies will be applied to classroom instruction across the content areas."
- **Improving student attitude about writing:** "By spring of 1989, 90 percent of East Orient students will demonstrate an appreciation of writing as measured through an attitude survey. Throughout the year, students will participate in fun writing activities. Teachers will succeed in motivating students to write their best."
- **Increasing teacher collegiality through peer coaching and planning:** "By spring of 1989, 100 percent of staff will participate in team planning sessions, 50 percent of staff will make informal presentations at faculty meetings, and 30 percent of staff will present to teachers of surrounding districts."

To meet these goals, a wide variety of professional development activities were organized during the 1988-89 school year:

- A three-day June inservice for language arts teachers with a language arts consultant who presented a model for whole language instruction, integrating speaking, listening, reading and writing in both expressive and receptive strands. Teachers learned instructional methods and techniques for this integrative approach and received extensive materials for classroom use. This consultant returned several times during the school year to observe, provide technical assistance and give sample lessons to increase use of this approach.

- A follow-up half-day session at an October staff retreat with another language arts consultant offering further techniques for whole language instruction, with particular emphasis on writing instruction.

- Mini-grants to individual teachers to attend one- and two-day seminars, conferences and workshops with writing-related content during the year.

- Collection of resources on writing instruction, providing teachers increased access to professional literature in the area.

- Four full days of team planning during the school year to increase teacher awareness of and skills in a "writing across the curriculum" approach. One group of teachers met one day in July to follow up with discussions and planning for applying the language arts consultant's approach in their classrooms.

- A spring retreat focusing on writing response groups and cooperative learning techniques for teaching writing.

- Refocusing the peer coaching program to emphasize writing instruction, particularly teacher behaviors that enhance the students' "writing disposition" (favorable attitude about writing).

In addition to new activities, ongoing teacher development activities were continued, again with a stronger focus on student writing performance. Two ongoing teacher groups continued their work: the "Student-Focus Group" in which teachers met monthly to analyze and solve instructional problems of targeted individual students, and the "Pedagogical Problem Solvers," where teachers examined alternative instructional techniques. Tuition reimbursement, mini-grants and leave programs were also continued.

The staff development programs resulted in major changes in writing activities in the school:

- The integrated approach to writing instruction led to emphasis on the publication of student writing and the creation of a Publishing Center for use in individual classrooms. The Center is a cabinet containing binding machines, writing materials and various paper colors and types, a mobile cart that moves from room to room as student projects are ready for final preparation. Language Arts teachers were trained in "Bookmaking" at a special inservice and work with students to design and complete publications. A parent volunteer now staffs the Center, increasing availability and shortening timelines from first draft to final product.

- Another publishing activity for students involved founding a quarterly literary magazine written, edited and produced by students, from copy and artwork through word processing of final copy to be sent to the printer. The magazine averages about 70 pages of student writings.

- Students now are producing a monthly newspaper featuring student writing and artwork and fully prepared by students.

- According to staff surveys, student attitudes about writing have changed, and staff are far more likely to become involved in innovative instructional approaches. There has been a drop in staff absenteeism accompanied by an increase in professional leave being granted for learning at meetings or through staff exchanges.

The combination of the school's current emphasis on improvement with significant staff development funding allowed East Orient to make an intense effort in one instructional area. A number of changes resulted, and the school was able to meet its goals:

- The student performance goal was met: by spring of 1989 the average school score on the analytical writing assessment had increased from 3.4 to 3.53 on a 1-5 scale.

- School language arts staff have now enthusiastically adopted a whole language approach to writing instruction.

- Student attitudes about writing appear to have changed dramatically, especially evident in interest in the publication of student work.
- More teachers spend more time working together to solve instructional problems and learn new instructional methods and techniques.

Practice: Writing Workshop Folders

Mrs. Mary Day's class of eighth graders is organized into small groups for the two-period language arts block each day. Students are at paired desks reading, writing or quietly discussing their work together.

Each student in the class is responsible for maintaining a folder which contains a spiral notebook, mimeographed forms, lists and special information on the front and back. Items in the folders include:

- Rules for using time in class: how students work together and separately to complete assigned tasks
- List for keeping track of the books that the student has read
- Spelling list of words to learn
- Mini-lessons of sample work
- Individual goal sheets on which students list personal language arts goals, e.g., "improve vocabulary using vocabulary lists," "take more risks in writing," etc. (goals are handed in to the teacher and checked periodically)

Also contained in the class folder is a separate folder specifically for writing and containing:

- Rules for the writing workshop approach used in the classroom: how to get organized for writing tasks, the steps toward completing a final piece, etc.
- Lists of a variety of sample sentences for models of writing approaches
- Spiral notebook for recording assigned work. In one quarter of the year students make columns in their notebooks in which to record new vocabulary words, quotes and ideas, thoughts and questions that could be useful in their writing. In another quarter, students write letters back and forth to others in the class. Notebooks are picked up and checked by the teacher once a week.
- Spelling lists
- Skills lists: what students need to work on in their writing, e.g., "use of apostrophes to show ownership," etc.
- Titles of finished writings, those that have been edited, reviewed, revised and completed
- Writings in progress, including stories, book reports and essays on which the student is currently working. (All students complete book reports that focus on their reactions to the books, not on plot summaries. Book reports are then made available to other students who are looking for something new to read and write about.)

In another part of the classroom, students each have an assigned file in which they put final copy of their written work. During the language arts workshop, students move freely about the room to find materials as necessary and consult with the teacher on individual projects, using the folders to store their work. Folders keep students organized and allow students and teachers to monitor progress toward completing assignments.

For further information, contact Tom Greene, Principal, East Orient Elementary School, 7431 S.E. 302nd Avenue, Gresham, Oregon 97080, (503) 663-4818.

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of time-on-task expended by students, and have made discoveries of consequence to educators and policymakers.

> *Time-on-task in interactive activities with a teacher produces greater achievement and better attitudes than time-on-task in seatwork.*

This finding emerges from the work of many researchers interested in the effects of time-on-task (e.g., Borg 1980; Quartarola 1984; Rosenshine 1979; Sanford and Evertson 1983; Seifert and Beck 1984; Stallings 1980; and Strother 1984). Specific interactive activities identified by these researchers as beneficial uses of student and teacher time include:

- The use of immediate feedback and correctives in classroom recitations
- Focused questions, praise, and reinforcement
- Listening and thinking during classroom interactions
- Discussion/review, reading aloud, verbal drill and practice

Some researchers have taken a closer look at the effects of time-on-task in seatwork and have determined that not all seatwork activities are equal in their effects. Although these researchers were not specifically concerned with the ALT concept, their findings point to the positive effects produced by seatwork activities likely to increase ALT.

> *Seatwork is most beneficial to students when teachers prepare activities carefully, manage seatwork efficiently, supervise it actively, and give students help and feedback in such a way that other students are not disturbed.*

Rosenshine (1979) found this to be true regarding the seatwork component of his direct instruction model, and this finding has also emerged in the work of Strother (1984) and of Helmke and Schrader (1988), who write:

> ...qualitative, not quantitative, factors are crucial for the effectiveness of practice....First, adequate external conditions must be provided for independent practice; for example, nonacademic activities, procedures , and disruptions should be held to a minimum. Second, the continuity of seatwork seems to be of special significance....independent practice is of benefit only if student have already attained a minimum level of competency....Third, practice is more successful when the teacher actively circulates around the classroom, not only monitoring but also supervising students' work and giving support to single students discreetly, without distracting other students (p. 74).

Conversely, researchers (e.g., Quartarola 1984) have found that unmonitored seatwork and seatwork activities which are not matched to student ability levels are at best unrelated to achievement and sometimes have negative achievement effects.

The foregoing findings have mostly to do with different kind of structures and with the overt activities of students. Covert measures of student engagement are important, too, and researchers have found that these are an even better indicator of the quality of time-on-task during seatwork than are overt measures:

> *Time-on-task in seatwork activities is most beneficial when students' thoughts are focused on specific cognitive strategies and on motivational ideas.*

Peterson and Swing (1982), among others, have noted that when students' thoughts are focused on "I can do it," and "here's how I can do it," achievement results are superior to those produced by thoughts unrelated to the task or reflective of anxiety about the task. These researchers point to the importance of gathering students' reports about their thought processes as part of research on the effects of time factors, since it is easy for observers to mistake an on-task student for one who is off-task and vice versa.

MASTERY LEARNING AND HOMEWORK

If certain kinds of time-on-task are positively related to student achievement, it is reasonable to expect that instructional approaches which foster those kinds of time-on-task would be successful in promoting achievement increases. Mastery learning, with its emphasis on specific objectives, careful teaching to those objectives, and provision of additional time allotments to those students who initially fail to reach a predetermined criterion on formative tests, has frequently been found superior to nonmastery approaches in fostering achievement gains.

As noted earlier in this report, research results on the effectiveness of group-based mastery learning programs are mixed, and this is not the place to examine in detail the many mastery learning studies and their findings. However, looking at the work of researchers as diverse in their views and findings as Block, Efthim, and Burns (1989); Slavin (1987), and Guskey and Gates (1986), one can say with confidence that:

> *The success of mastery learning programs in promoting learning gains is due largely to the extra amounts of quality time-on-task expended by students in these programs, and particularly by middle- and lower-ability students.*

The research on homework has produced more consistent findings. While researchers are careful to point out that homework *per se* is unlikely to produce achievement gains, they have concluded that:

> *Appropriate kinds and amounts of homework raise achievement levels for students above the primary grades.*

And what are appropriate kinds and amounts of homework? The attributes of effective homework assignments are identified in the work of Butler (1987); Holmes and Cross (1989); Hossler, Stage, and Gallagher (1988), and Paschal, Weinstein, and Walberg (1984). They have found that homework is most beneficial when it is:

- Relevant to learning objectives
- Appropriate to students' ability and maturity levels
- Assigned regularly (Paschal, Weinstein, and Walberg 1984 found the greatest benefits produced by daily homework assignments.)
- Assigned in reasonable amounts (Thirty minutes per subject per day, say Hossler, Stage and Gallagher 1988.)
- Well explained and motivational
- Collected and reviewed during class time
- Used as an occasion for giving feedback to students
- Supported by parents (e.g., arranging for study space, signing off on assignments)

TIME FACTORS AND STUDENT CHARACTERISTICS

Thus far, the findings presented pertain to the effects of time allocations and time-on-task on students in general. More specific findings include:

> *Increasing allocated or engaged time is more beneficial to lower-ability students than to higher-ability students.*

Since student performance is dependent upon the amount of time *needed* to learn as well as the amount of time provided, only those students who need greater amounts of time to learn (and who, perhaps, do not normally have enough time to pursue tasks thoroughly and learn them well) perform better when they are given and make use of additional learning time. Various researchers (e.g., Anderson 1983; Brown and Saks 1986; Gettinger 1984, 1989; Kidder, O'Reilly, and Kiesling 1975, and others) have noted that:

> *Higher-ability students benefit from increases in allocated and/or engaged time very slightly, if at all.*

Gettinger (1984) writes:

> ...the present findings suggest that the consequence of additional instructional time may not be the same for all students because there are individual differences in how much exposure or instruction is actually needed for mastery (p. 626).

Another way in which time-on-task affects different students differently emerges from the work of Guida, Ludlow, and Wilson (1985), who found that: